5225, 5325, 5425, 5525, 5625 and 5603 Tractor Repair

TECHNICAL MANUAL

5225, 5325, 5425, 5525, 5625 and 5603 Tractor Repair

TM2187 18DEC06 (ENGLISH)

For complete service information also see:

5225, 5325, 5425, 5525, 5625 and 5603 Tractor Operation and Test	TM2197
Component Technical Manual 4045 Engine	CTM104
Component Technical Manual 4045 Mechanical Fuel System	CTM207
Component Technical Manual 5030 Engine	CTM301
Alternators and Starting Motors	CTM77
Component Technical Manual Front-Wheel Drive Axles 00.16	CTM4870

John Deere Augusta Works

LITHO IN U.S.A.

Introduction

Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

⚠ This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

DX,TMIFC –19–29SEP98–1/1

Contents

SECTION 10—General Information
Group 05—Safety
Group 10—General Specifications
Group 20—Fuel and Lubricants
Group 25—Serial Number Locations
Group 30—Features and Accessories

SECTION 20—Engine Repair
Group 05—Engine
Group 10—Cooling System

SECTION 30—Fuel and Air Repair
Group 05—Fuel System
Group 10—Air Intake System
Group 15—Speed Control Linkage

SECTION 40—Electrical Repair
Group 05—Battery, Starter and Alternator
Group 10—Electrical System Components
Group 15—Wiring Harness

SECTION 50—Power Train Repair
Group 05—Clutch Housing
Group 10—Clutch Assembly—SYNCSHUTTLE Transmissions
Group 11—Clutch Assembly—POWRREVERSER Transmission
Group 12—POWRREVERSER
Group 15—SYNCSHUTTLE Transmission
Group 16—POWRREVERSER Transmission
Group 20—Rear PTO Drive Shaft
Group 25—Differential
Group 30—Final Drives
Group 31—Hi-Crop Final Drives
Group 35—Mechanical Front Wheel Drive
Group 40—Creeper Assembly

SECTION 60—Steering and Brake Repair
Group 05—Steering Repair
Group 10—Brake Repair

SECTION 70—Hydraulic Repair
Group 05—Hydraulic Pump and Filter
Group 06—Hydraulic Oil Cooler
Group 10—Rockshaft
Group 15—Selective Control Valve
Group 20—Hydraulic Mid-Mount Control Valve

SECTION 80—Miscellaneous Repair
Group 05—Front Axle—2WD
Group 10—Wheels
Group 15—3-Point Hitch
Group 20—Fenders
Group 25—Hood

SECTION 90—Operator Station Repair
Group 05—Seat and Support
Group 06—Control Console and Panel
Group 10—ROLL-GARD
Group 15—Cab Components
Group 16—Isolated Open Operator Station Components
Group 20—Air Conditioning System
Group 25—Heating System

SECTION 99—Dealer Fabricated Tools
Group 05—Dealer Fabricated Tools

10
20
30
40
50
60
70
80
90
99

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

COPYRIGHT © 2006
DEERE & COMPANY
Moline, Illinois
All rights reserved
A John Deere ILLUSTRUCTION® Manual
Previous Editions
Copyright © 2005

10

20

30

40

50

60

70

80

90

99

Section 10
General Information

Contents

Page

Group 05—Safety 10-05-1

Group 10—General Specifications

Machine Specifications 5225 and 5325 10-10-1
Machine Specifications 5425, 5525, 5625 and 5603 10-10-4
SYNCSHUTTLE™ Transmission Ground Speed Estimates 10-10-7
SYNCSHUTTLE™ Creeper Transmissions Ground Speed Estimates. 10-10-8
POWRREVERSER™ Transmission Ground Speed Estimates 10-10-9
POWRREVERSER™ Creeper Transmissions Ground Speed Estimates . . .10-10-10
Correction Factors for Other Tire Sizes. 10-10-11
Machine Dimensions (Straddle Mount) 10-10-12
Machine Dimensions (5525 Series Hi-Crop Straddle Mount). .10-10-14
Machine Dimensions (Isolated Open Operator Station) 10-10-16
Machine Dimensions (Cab) 10-10-18
Repair Specifications. 10-10-20
Service Recommendations for O-Ring Boss Fittings 10-10-31
Service Recommendations For Flat Face O-Ring Seal Fittings. 10-10-33
Metric Cap Screw Torque Values—Grade 7 10-10-34
Metric Bolt and Screw Torque Values 10-10-35
Unified Inch Bolt and Screw Torque Values 10-10-36
Abbreviations 10-10-37

Group 20—Fuel and Lubricants

Diesel Fuel 10-20-1
Handling and Storing Diesel Fuel 10-20-2
Do Not Use Galvanized Containers. 10-20-2
Lubricity of Diesel Fuel 10-20-3
Testing Diesel Fuel 10-20-3
Bio-Diesel Fuel 10-20-4
Filling Fuel Tank 10-20-5
Diesel Engine Break-In Oil (5425, 5525, 5625 and 5603) 10-20-6
Diesel Engine Oil 10-20-7
Oil Filters. 10-20-8
Diesel Engine Coolant. 10-20-9

Page

Operating in Warm Temperature Climates . . .10-20-10
Additional Information About Diesel Engine Coolants and Supplemental Coolant Additives 10-20-11
Testing Diesel Engine Coolant 10-20-12
Transmission and Hydraulic Oil. 10-20-13
Use Correct Transmission/Hydraulic Filter Element 10-20-13
MFWD Axle Housing and Wheel Hub Oil 10-20-14
Grease 10-20-15
Grease (Specific Application) 10-20-15
Mixing of Lubricants .10-20-15
Alternative and Synthetic Lubricants 10-20-16
Lubricant Storage 10-20-16

Group 25—Serial Number Locations

Serial Numbers 10-25-1
Product Identification Number Location 10-25-1
Engine Serial Number Location—4-Cylinder . . .10-25-1
Engine Serial Number Location—5-Cylinder . . .10-25-2
Fuel Injection Pump Serial Number Location. . .10-25-2
Alternator Identification Number Location 10-25-3
Power Steering Valve Serial Number Location. 10-25-3
Starter Serial Number Location—4-Cylinder . . .10-25-4
Starter Serial Number Location—5-Cylinder . . .10-25-4
Transmission Serial Number Location 10-25-5
Front Axle (2WD) Serial Number Location. 10-25-5
Mechanical Front Wheel Drive (MFWD) Serial Number Location .10-25-6
Air Conditioning Compressor Serial Number Location. 10-25-6
Cab Serial Number Location 10-25-7

Group 30—Features and Accessories

Features and Accessories. 10-30-1
Standard Features—Straddle Mount and Isolated Open Operator Station Tractors 10-30-2
Standard Features—Cab Tractor. 10-30-4
Standard Features—5525 Hi-Crop Straddle Mount Tractors 10-30-6
Factory Installed Optional Equipment 10-30-7
Field Installed Optional Kits and Accessories 10-30-8

Recognize Safety Information

This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

T81389 –UN–07DEC88

DX,ALERT –19–29SEP98–1/1

Handle Fluids Safely—Avoid Fires

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

TS227 –UN–23AUG88

DX,FLAME –19–29SEP98–1/1

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

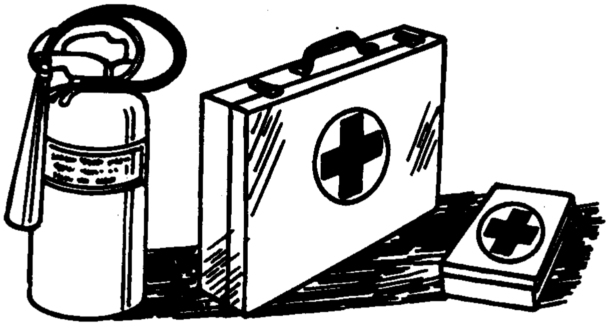
Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

TS204 –UN–23AUG88

DX,SPARKS –19–03MAR93–1/1

Prepare for Emergencies



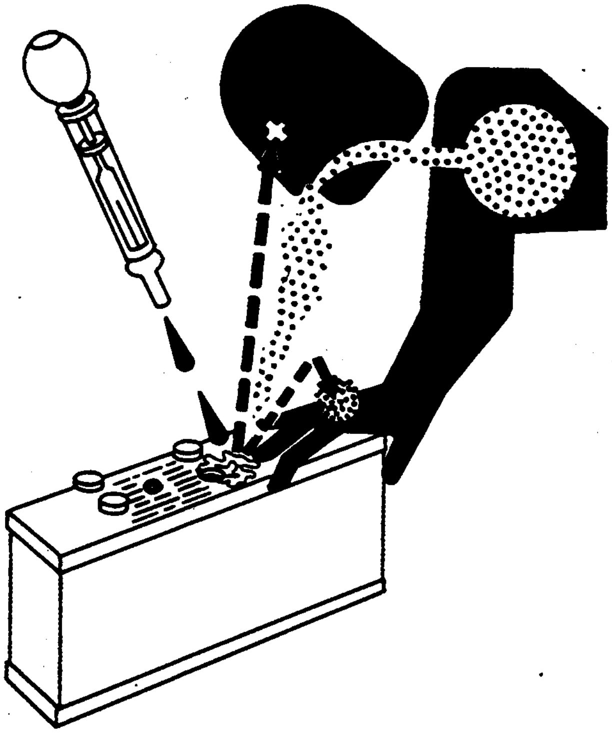
Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

DX,FIRE2 –19–03MAR93–1/1

Prevent Acid Burns



Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.

DX,POISON –19–21APR93–1/1

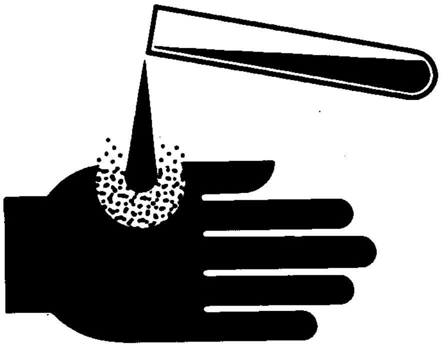
Service and Operate Chemical Sprayers Safely

Chemicals used in agricultural sprayers can be harmful to your health or the environment if not used carefully.

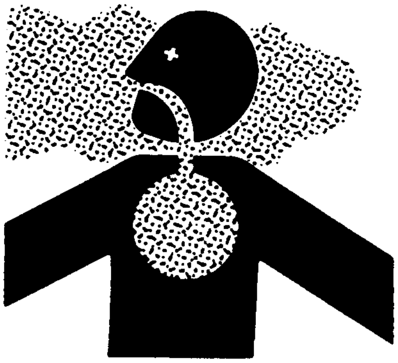
Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

- Wear appropriate personal protective equipment as recommended by the manufacturer. (See ‘Handle agricultural chemicals safely’ found in the Safety Section.)
- Fill, flush, calibrate, and decontaminate sprayer in an area where runoff will not reach ponds, lakes or streams, livestock areas, or gardens, or near other people.
- Keep children away from the chemicals, chemical solutions, and rinsates
- If spray or chemical concentrate contacts skin, hands, or face, wash immediately with soap and water.
  If spray or chemical concentrate gets into eyes, flush immediately with water
- If nozzle clogs or system malfunctions, stop engine and relieve spray pressure from system.
- Do not place nozzle tips or other components to the mouth to clear obstructions. Keep spare tips on hand for replacement.
- Minimize risk of spray drift.
  - Use large nozzle tips operated at lower pressures
  - Do not operate solution delivery system at pressures exceeding 345kPa (3.5 bar) (50 psi).
  - Do not spray when winds exceed 16 km/h (10 mph).
  - Do not spray when wind is blowing towards a nearby sensitive crop, garden, or populated area.
- Properly dispose of unused chemicals, flushing solution, and empty chemical containers.
- Decontaminate equipment used in mixing, transferring, and applying chemicals after use.



TS272 –UN–23AUG88



TS220 –UN–23AUG88

DX,WW,CHEM02 –19–05APR04–1/1

Handle Chemical Products Safely

TS1132 –UN–26NOV90

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

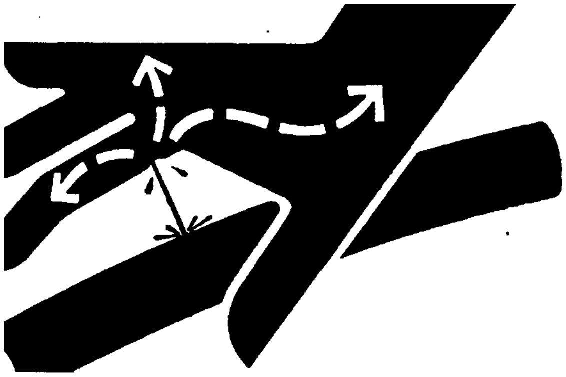
A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

(See your John Deere dealer for MSDS's on chemical products used with John Deere equipment.)

DX,MSDS,NA –19–03MAR93–1/1

Avoid High-Pressure Fluids



X9811 –UN–23AUG88

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

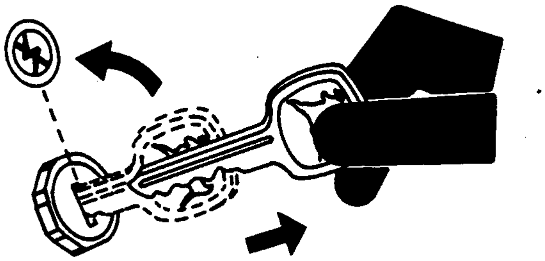
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

DX,FLUID –19–03MAR93–1/1

Park Machine Safely

Before working on the machine:

- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



TS230 –UN–24MAY89

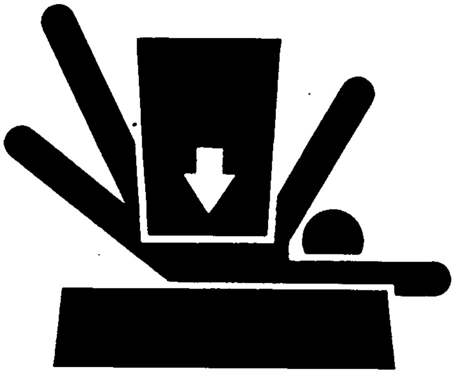
DX,PARK –19–04JUN90–1/1

Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.



TS229 –UN–23AUG88

DX,LOWER –19–24FEB00–1/1

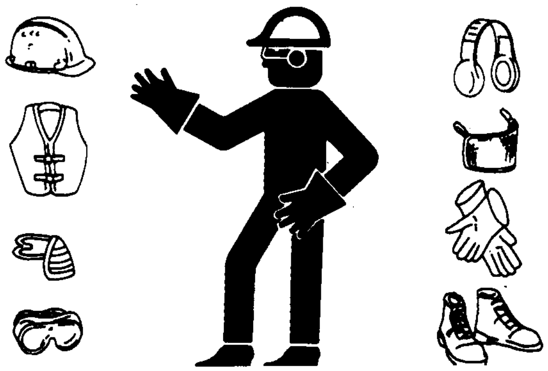
Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



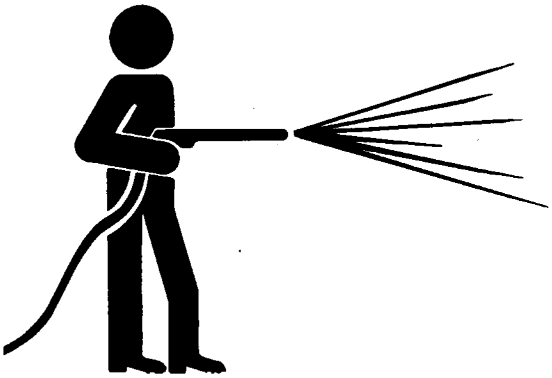
TS206 –UN–23AUG88

DX,WEAR –19–10SEP90–1/1

Work in Clean Area

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



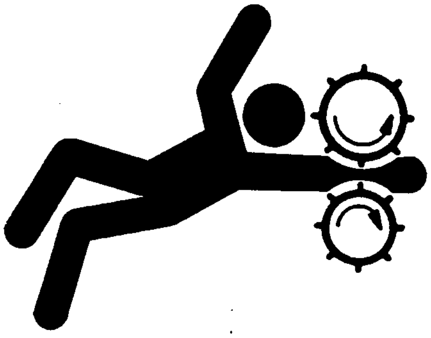
T6642EJ –UN–18OCT88

DX,CLEAN –19–04JUN90–1/1

Service Machines Safely

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



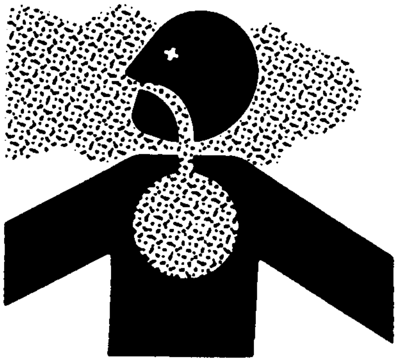
TS228 –UN–23AUG88

DX,LOOSE –19–04JUN90–1/1

Work In Ventilated Area

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area

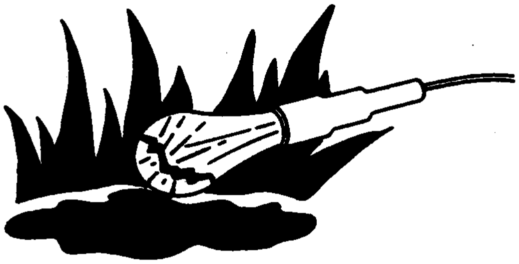


TS220 –UN–23AUG88

DX,AIR –19–17FEB99–1/1

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

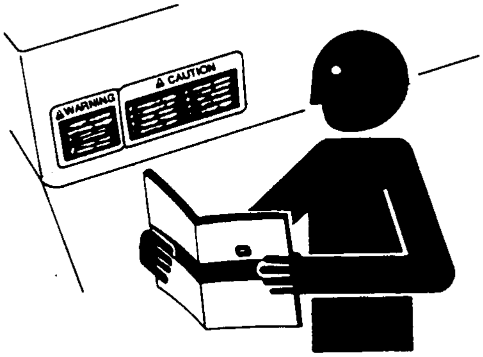


TS223 –UN–23AUG88

DX,LIGHT –19–04JUN90–1/1

Replace Safety Signs

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



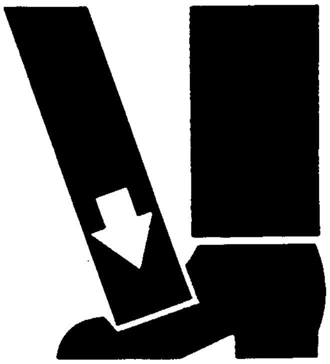
TS201 –UN–23AUG88

DX,SIGNS1 –19–04JUN90–1/1

Use Proper Lifting Equipment

Lifting heavy components incorrectly can cause severe injury or machine damage.

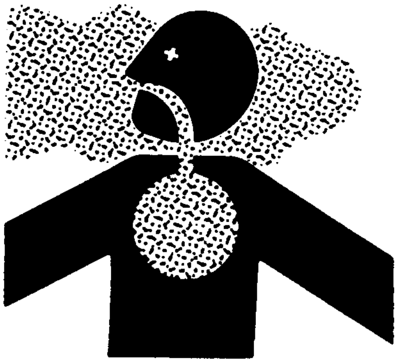
Follow recommended procedure for removal and installation of components in the manual.



TS226 –UN–23AUG88

DX,LIFT –19–04JUN90–1/1

Remove Paint Before Welding or Heating



TS220 –UN–23AUG88

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

Do not use a chlorinated solvent in areas where welding will take place.

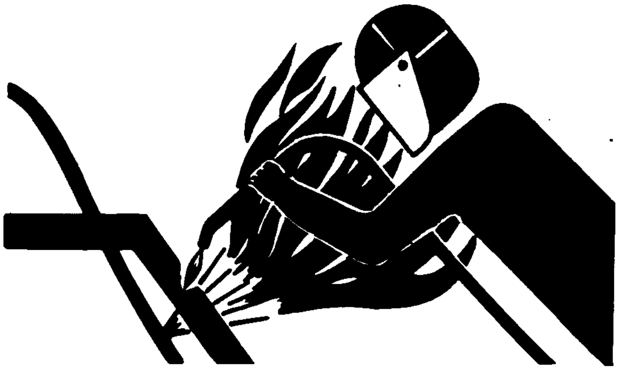
Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

DX,PAINT –19–24JUL02–1/1

Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when heat goes beyond the immediate flame area.



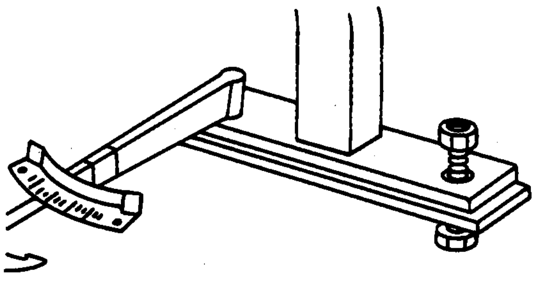
TS953 –UN–15MAY90

DX,TORCH –19–10DEC04–1/1

Keep ROPS Installed Properly

Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.



TS212 –UN–23AUG88

DX,ROPS3 –19–03MAR93–1/1

Service Tires Safely

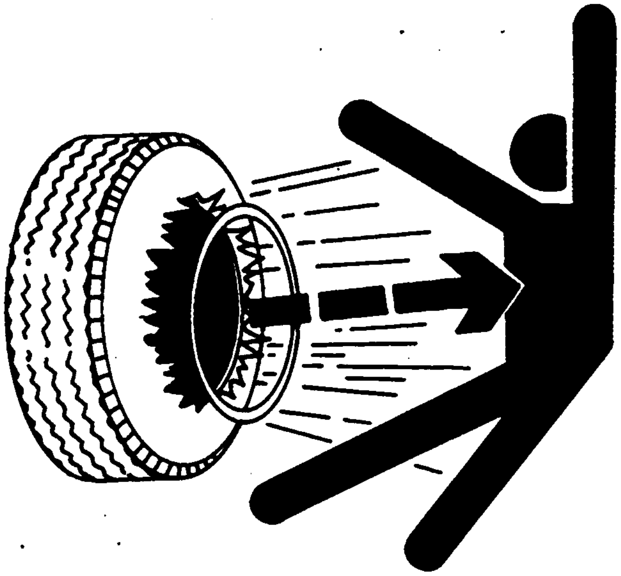
Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

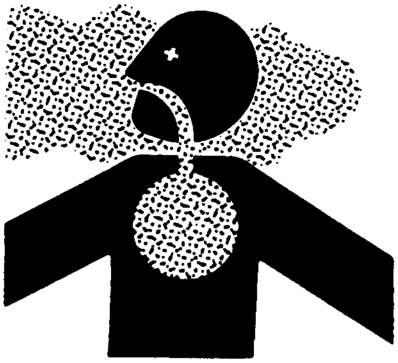
Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



TS211 –UN–23AUG88

DX,RIM –19–24AUG90–1/1

Avoid Harmful Asbestos Dust



TS220 –UN–23AUG88

Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos.

Keep bystanders away from the area.

DX,DUST –19–15MAR91–1/1

Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet , and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

TS218 –UN–23AUG88

DX,SERV –19–17FEB99–1/1

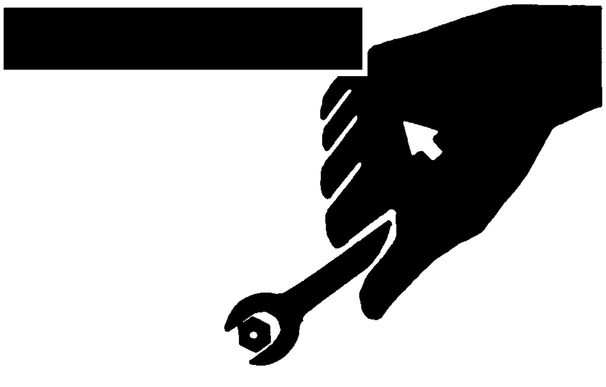
Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

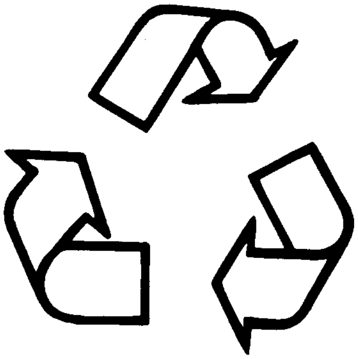
Use only service parts meeting John Deere specifications.



TS779 –UN–08NOV89

DX,REPAIR –19–17FEB99–1/1

Dispose of Waste Properly



Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

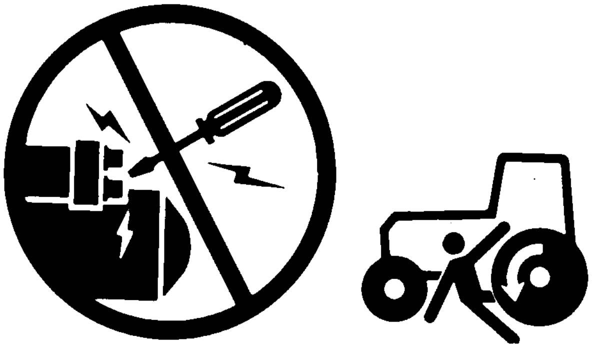
Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.

DX,DRAIN –19–03MAR93–1/1

Prevent Machine Runaway



Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.

DX,BYPAS1 –19–29SEP98–1/1

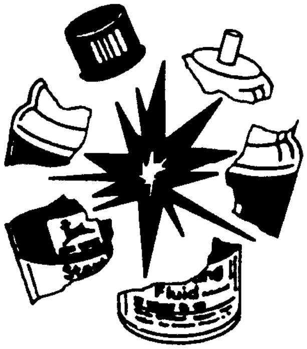
Handle Starting Fluid Safely

Starting fluid is highly flammable.

Keep all sparks and flame away when using it. Keep starting fluid away from batteries and cables.

To prevent accidental discharge when storing the pressurized can, keep the cap on the container, and store in a cool, protected location.

Do not incinerate or puncture a starting fluid container.



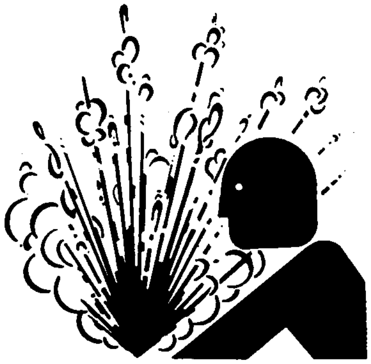
TS1356 –UN–18MAR92

DX,FIRE3 –19–16APR92–1/1

Service Cooling System Safely

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



TS281 –UN–23AUG88

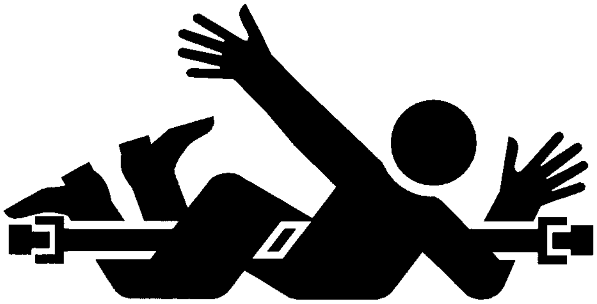
DX,RCAP –19–04JUN90–1/1

Stay Clear of Rotating Drivelines

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.



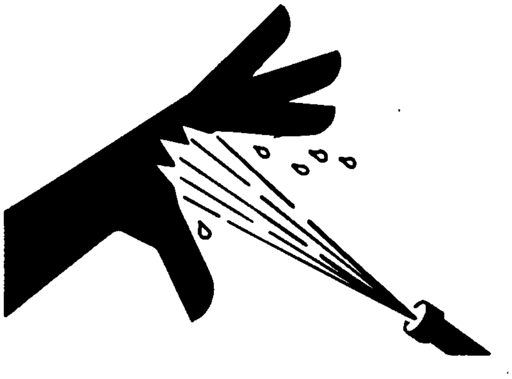
TS1644 –UN–22AUG95

DX,PTO –19–12SEP95–1/1

Protect Against High Pressure Spray

Spray from high pressure nozzles can penetrate the skin and cause serious injury. Keep spray from contacting hands or body.

If an accident occurs, see a doctor immediately. Any high pressure spray injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



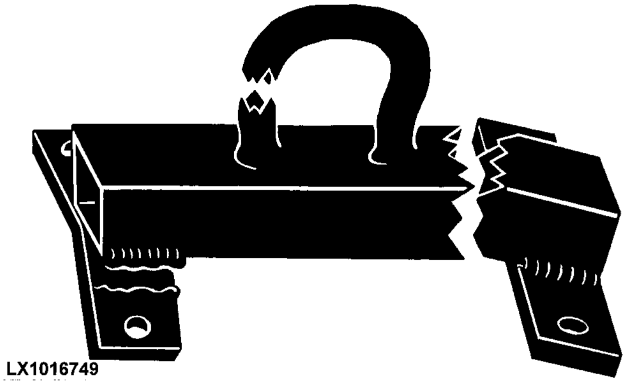
TS1343 –UN–18MAR92

DX,SPRAY –19–16APR92–1/1

Construct Dealer-Made Tools Safely

Faulty or broken tools can result in serious injury. When constructing tools, use proper, quality materials, and good workmanship.

Do not weld tools unless you have the proper equipment and experience to perform the job.



LX1016749 –UN–01JUL97

DX,SAFE,TOOLS –19–10OCT97–1/1

Clean Vehicle of Hazardous Pesticides

⚠ **CAUTION: During application of hazardous pesticides, pesticide residue can build up on the inside or outside of the vehicle. Clean vehicle according to use instructions of hazardous pesticides.**

When exposed to hazardous pesticides, clean exterior and interior of vehicle daily to keep free of the accumulation of visible dirt and contamination.

1. Sweep or vacuum the floor of cab.
2. Clean headliners and inside cowlings of cab.
3. Wash entire exterior of vehicle.
4. Dispose of any wash water with hazardous concentrations of active or non-active ingredients according to published regulations or directives.

DX,CABS2 –19–24JUL01–1/1

Live With Safety

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

SAFETY
live with it

TS231 –19–07OCT88

DX,LIVE –19–25SEP92–1/1

Machine Specifications 5225 and 5325

NOTE: Specifications and design subject to change without notice.

Item	Measurement	Specification
Engine	Make	John Deere
	Type	Diesel
	Model	5030PF270
	Aspiration	Turbocharged
	Horsepower (5225)	41 kW (55 hp)
	Horsepower (5325)	50 kW (66 hp)
	Rated Engine Speed	2400 rpm
	Operating Range	1600—2400 rpm
	Number of Cylinders	5
	Displacement	3.0 L (184 cu in.)
	Bore and Stroke	86 x 105 mm (3.39 x 4.13 in.)
	Compression Ratio	18.0:1
	Fast Idle	2625 ±50 rpm
	Slow Idle	900 ±50 rpm
	Start Aid	Glow Plugs
	Firing Order	1-2-4-5-3
	Timing	Factory Preset
	Lubrication	Pressurized
	Cooling	Liquid Cooled
	Air Cleaner	Dry Type with Primary/Secondary Elements
	Engine Shutoff	Key Switch
Fuel System	Type	Intergrated Fuel System (IFS) Integral with Cylinder Block
Electrical System	Type	12 Volt Negative Ground
	Battery Size	925 Cold Cranking Amps
	Alternator Without Cab	70 Amp
	Alternator With Cab	90 Amp

Continued on next page PK80954,000080C –19–02NOV06–1/3

Item	**Measurement**	**Specification**
Drive Train	Transmission Type	SYNCSHUTTLE (Standard) SYNCSHUTTLE with Shiftable 540/540E PTO (Optional) 12/12 POWRREVERSER with Mechanical Hitch, Mechanical PTO (1 Speed or Shiftable 540/540E) (Optional) 24/24 POWRREVERSER with 540/540E PTO, EH Hitch and EH Hi/Lo (Optional)
	Number of Speeds	9 Forward, 3 Reverse (SYNCSHUTTLE) 12 Forward, 12 Reverse (POWRREVERSER) 24 Forward, 24 Reverse (POWRREVERSER With EH Hi/Lo)
	Final Drive	Planetary
	Clutch	Dual, Dry Multi-Disk, Wet (POWRREVERSER)
Steering/Brakes	Steering	Hydrostatic Power
	Brakes	Wet Disc Self-Equalizing Self-Adjusting
Hydraulic System	Type	Open Center
	Working Pressure	19 500 ± 500 kPa (195 ± 5 bar) (2828 ± 73 psi)
	Pump Type	Tandem Gear
	Capacity	(51.2 L/min 13.5 gpm)
	Hitch Lift Capacity at 610 mm (24 in.) behind Hitch Balls	1530 kg (3374 lb)
	Lift Control Type	Position and Depth

Continued on next page PK80954,000080C –19–02NOV06–2/3

Item	Measurement	Specification
Rear PTO[1]	Type	Fully Independent
	Horsepower (5225)	34 kW (45 hp)
	Horsepower (5325)	41 kW (55 hp)
	Speed (540 Standard Mode) @ 2400 rpm Engine Speed	540 rpm
	Speed (540E Economy Mode) @ 1700 rpm Engine Speed	540 rpm
Capacities	Fuel Tank (Straddle Mount)	96.5 L (25.5 gal)
	Fuel Tank (Isolated Open Operator Station and Cab Tractors)	126.8 L (33.5 gal)
	Cooling System	9.5 L (10 qt)
	Engine Crankcase w/filter	10 L (11 qt)
	Hydraulic System	SYNCSHUTTLE Transmission 39 L (10.3 gal) POWRREVERSER without Hi/Lo Transmission 43.5 L (11.5 gal) POWRREVERSER with Hi/Lo Transmission 45.4 L (12 gal)
	MFWD Wheel Hubs	0.7 L (0.74 qt)
	MFWD Differential Housing	4.5 L (4.8 qt)

---

[1] *540E Economy Mode available on SYNCSHUTTLE and POWRREVERSER Transmissions.*

PK80954,000080C –19–02NOV06–3/3

Machine Specifications 5425, 5525, 5625 and 5603

NOTE: Specifications and design subject to change without notice.

Item	Measurement	Specification
Engine	Make	John Deere
	Type	Diesel
	Model	4045TLV54 (5425 and 5525)
	Model	4045TLV56 (5625 and 5603)
	Aspiration	Turbocharged
	Horsepower (5425)	64 kW (85 hp)
	Horsepower (5525)	71kW (95 hp)
	Horsepower (5625 and 5603)	74kW (99 hp)
	Rated Engine Speed	2400 rpm
	Number of Cylinders	4
	Displacement	4.5 L (276 cu in.)
	Bore and Stroke	106 x 127 mm (4.19 x 5.00 in.)
	Compression Ratio	17.6:1
	Fast Idle	2625 ±25 rpm
	Slow Idle	825 ±25 rpm
	Start Aid	Air Heater (Optional)
	Firing Order	1-3-4-2
	Timing (5425)	9° BTDC
	Timing (5525)	8° BTDC
	Lubrication	Pressurized
	Cooling	Liquid Cooled
	Air Cleaner	Dry Type with Primary/Secondary Elements
	Engine Shutoff	Key Switch
Fuel System	Type	Direct Injection
	Injection Pump Type	Rotary w/electric Shutoff Electric Fuel lift Pump (5625 and 5603 Only)
Electrical System	Type	12 Volt Negative Ground
	Battery Size	750 Cold Cranking Amps
	Alternator Without Cab	70 Amp
	Alternator With Cab	90 Amp (Optional 120 Amp)

Continued on next page

Item	Measurement	Specification
Drive Train	Transmission Type	SYNCSHUTTLE (Standard) SYNCSHUTTLE with Shiftable 540/540E PTO (Optional) 12/12 POWRREVERSER with Mechanical Hitch, Mechanical PTO (1 Speed or Shiftable 540/540E) (Optional) 24/24 POWRREVERSER with 540/540E PTO, EH Hitch and EH Hi/Lo (Optional)
	Number of Speeds	9 Forward, 3 Reverse (SYNCSHUTTLE) 12 Forward, 12 Reverse (POWRREVERSER) 24 Forward, 24 Reverse (POWRREVERSER With EH Hi/Lo)
	Final Drive	Planetary
	Clutch	Dual, Dry Multi-Disk, Wet (POWRREVERSER)
Steering/Brakes	Steering	Hydrostatic Power
	Brakes	Wet Disc Self-Equalizing Self-Adjusting
Hydraulic System	Type	Open Center
	Working Pressure	19 500 ± 500 kPa (195 ± 5 bar) (2828 ± 73 psi)
	Pump Type	Tandem Gear
	Capacity	69.9 L/min (18.4 gpm)
	Hitch Lift Capacity at 610 mm (24 in.) behind Hitch Balls	1530 kg (3374 lb)
	Lift Control Type	Position and Depth

Continued on next page

PK80954,000080D –19–02NOV06–2/3

Item	Measurement	Specification
Rear PTO[1]	Type	Fully Independent
	Horsepower (5425)	49 kW (65 hp)
	Horsepower (5525)	56 kW (75 hp)
	Horsepower (5625 and 5603)	61 kW (82 hp)
	Speed (540 Standard Mode) @ 2400 rpm Engine Speed	540 rpm
	Speed (540E Economy Mode) @ 1700 rpm Engine Speed	540 rpm
Capacities	Fuel Tank (Straddle Mount)	96.5 L (25.5 gal)
	Fuel Tank (Isolated Open Operator Station and Cab Tractors)	126.8 L (33.5 gal)
	Cooling System	11.4 L (12 qt)
	Engine Crankcase w/filter	8.5 L (9 qt)
	Hydraulic System	SYNCSHUTTLE Transmission 39 L (10.3 gal) POWRREVERSER Transmission 45.4 L (12 gal)
	Hydraulic System (Equipped with High Crop Drop Axle)	SYNCSHUTTLE Transmission 64 L (17 gal) POWRREVERSER Transmission 70 L (18.5 gal)
	MFWD Wheel Hubs	0.7 L (0.74 qt)
	MFWD Axle Housing	4.5 L (4.8 U.S. qt)

---

[1] *Economy Mode available on SYNCSHUTTLE and POWRREVERSER Transmissions.*

PK80954,000080D –19–02NOV06–3/3

SYNCSHUTTLE™ Transmission Ground Speed Estimates

Speeds are calculated using 16.9-30, R1 rear tires. To calculate ground speeds for tractors equipped with rear tires other than 16.9-30, R1 tires, see Correction Factors for Other Tire Sizes in Section 10, Group 10.

	Operating Range-Forward (1600 to 2400 Engine RPM)	
Gear	**mph**	**km/h**
A—1	0.9—1.3	1.4—2.2
A—2	1.3—1.9	2.1—3.0
A—3	1.7—2.6	2.8—4.2
B—1	2.1—3.1	3.3—5.0
B—2	3.0—4.5	4.8—7.2
B—3	4.1—6.2	6.6—9.92
C—1	5.7—8.5	9.2—13.8
C—2	8.2—12.4	13.3—19.9
C—3	11.2—16.8	18.0—27.1
R—1	1.5—2.3	2.5—3.6
R—2	3.5—5.3	5.6—8.4
R—3	9.6—14.4	15.4—23.1

SYNCSHUTTLE is a trademark of Deere & Company

PK80954,000080E –19–07DEC04–1/1

SYNCSHUTTLE™ Creeper Transmissions Ground Speed Estimates

Speeds are calculated using 16.9-30, R1 rear tires. To calculate ground speeds for tractors equipped with rear tires other than 16.9-30, R1 tires, see Correction Factors for Other Tire Sizes in Section 10, Group 10.

Gear	**Higher Speed Creeper (1600 to 2400 Engine RPM)**	**Regular Speed Creeper (1600 to 2400 Engine RPM)**
Creeper-1F	0.35—0.53 mph 0.56—0.84 km/h	0.14—0.22 mph 0.24—0.36 km/h
Creeper-2F	0.51—0.76 mph 0.81—1.22 km/h	0.21—0.31 mph 0.33—0.51 km/h
Creeper-3F	0.69—1.04 mph 1.11—1.66 km/h	0.29—0.43 mph 0.46—0.69 km/h
Creeper-1R	0.59—0.89 mph 0.95—1.66 km/h	0.25—0.37 mph 0.40—0.59 km/h

SYNCSHUTTLE is a trademark of Deere & Company

PK80954,000080F –19–07DEC04–1/1

POWRREVERSER™ Transmission Ground Speed Estimates

Speeds are calculated using 16.9-30, R1 rear tires. To calculate ground speeds for tractors equipped with rear tires other than 16.9-30, R1 tires, see Correction Factors for Other Tire Sizes in Section 10, Group 10.

	Operating Range-Forward (1600 to 2400 Engine RPM)		**Operating Range-Reverse (1600 to 2400 Engine RPM)**	
Gear	**mph**	**km/h**	**mph**	**km/h**
A—1	0.5—0.9	1.0—1.5	0.8—1.1	1.2—1.7
A—2	0.8—1.2	1.2—1.8	0.9—1.3	1.4—2.2
A—3	1.0—1.5	1.6—2.4	1.2—1.7	1.8—2.7
A—4	1.3—2.1	2.2—3.2	1.6—2.4	2.5—3.8
B—1	1.8—2.7	2.9—4.3	2.1—3.1	3.3—5.1
B—2	2.3—3.3	3.6—5.4	2.6—3.9	4.2—6.3
B—3	2.9—4.4	4.6—7.0	3.3—5.1	5.4—8.1
B—4	4.0—5.9	6.4—9.6	4.6—6.9	7.5—11.1
C—1	5.1—7.7	8.2—12.3	5.9—8.9	9.5—14.3
C—2	6.4—9.6	10.3—15.3	7.3—11.0	11.9—17.8
C—3	8.3—12.4	13.3—19.9	9.5—14.3	15.3—23.0
C—4	11.2—16.8	18.0—27.1	13.1—19.5	21.0—31.4

POWRREVERSER is a trademark of Deere & Company

PK80954,0000810 –19–07DEC04–1/1

POWRREVERSER™ Creeper Transmissions Ground Speed Estimates

Speeds are calculated using 16.9-30, R1 rear tires. To calculate ground speeds for tractors equipped with rear tires other than 16.9-30, R1 tires, see Correction Factors for Other Tire Sizes in Section 10, Group 10.

Gear	**Higher Speed Creeper (1600 to 2400 Engine RPM)**	**Regular Speed Creeper (1600 to 2400 Engine RPM)**
Creeper-1F	0.25—0.37 mph 0.40—0.59 km/h	0.11—0.16 mph 0.17—0.26 km/h
Creeper-2F	0.30—0.46 mph 0.49—0.74 km/h	0.14—0.21 mph 0.23—0.33 km/h
Creeper-3F	0.40—0.60 mph 0.64—0.96 km/h	0.18—0.27 mph 0.28—0.42 km/h
Creeper-4F	0.54—0.81 mph 0.87—1.31 km/h	0.25—0.37 mph 0.39—0.58 km/h
Creeper-1R	0.29—0.42 mph 0.46—0.69 km/h	0.13—0.19 mph 0.21—0.30 km/h
Creeper-2R	0.35—0.53 mph 0.57—0.86 km/h	0.16—0.24 mph 0.25—0.38 km/h
Creeper-3R	0.46—0.69 mph 0.74—1.10 km/h	0.21—0.30 mph 0.33—0.50 km/h
Creeper-4R	0.63—0.93 mph 1.01—1.50 km/h	0.28—0.42 mph 0.44—0.67 km/h

POWRREVERSER is a trademark of Deere & Company

PK80954,0000811 –19–07DEC04–1/1

Correction Factors for Other Tire Sizes

To calculate ground speeds for tractors equipped with rear tires other than 16.9-30, R1 tires, multiply speeds shown in Ground Speed Estimates by the correction factor for the appropriate tire size found in the table. Be sure to use correct ground speed estimate for your transmission type (SYNCSHUTTLE or POWRREVERSER). Use creeper transmission ground speed estimates, if so equipped. Example: B—2 (SYNCSHUTTLE Transmission) at 2400 engine rpm with 16.9-24 R1 tires. 4.36 mph (7.02 km/h) x 0.90 = 3.92 mph (6.32 km/h)

Tire Size	Correction Factor
21.5L-16.1 R3	0.74
22.5LL-16.1 R3	0.70
16.9-24 R4	0.87
16.9-24 R3	0.88
19.5L-24 R4	0.88
16.9-24 R1	0.90
13.6-28 R1	0.90
14.9-28 R1	0.92
16.9-28 R1	0.97
15.5-38 R1	1.07
13.6-38 R2 (Hi-Crop)	1.09
230/95 R48 4STAR R1 (Veggie)	1.17

NOTE: Speed and correction factor information above is based on rolling circumference information from Firestone Farm Tire Data Book. Rolling circumference dimensions for “like” size tires vary by manufacturer.

PK80954,0000812 –19–21OCT05–1/1

Machine Dimensions (Straddle Mount)

	Tractor							
Dimension	**5225**		**5325**		**5425**		**5525**	
Straddle Mount	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**
Wheel Base	2050 (81)	2050 (81)	2050 (81)	2050 (81)	2177 (86)	2177 (86)	2177 (86)	2177 (86)
Overall Length Including Draft Links	3477 (137)	3597 (142)	3500 (138)	3632 (143)	3848 (151.5)	3848 (151.5)	3848 (151.5)	3848 (151.5)
Overall Width								
Outside Edge of Tires	1801 (71)	1801 (71)	1842 (72.5)	1842 (72.5)	1882 (74)	1882 (74)	1882 (74)	1882 (74)
MFWD Flange-to-MFWD Flange	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)
Rear Axle Flange-to-Rear Axle Flange	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)
Ground-to-Rops Top	2385 (94)	2385 (94)	2408 (95)	2408 (95)	2459 (97)	2459 (97)	2459 (97)	2459 (97)
Ground-to-Canopy Top	—	—	—	—	—	—	2641.6 (104.0)	2641.6 (104.0)
Ground-to-Folded ROPS Top	1920 (76)	1920 (76)	1946 (77)	1946 (77)	1994 (78.5)	1994 (78.5)	1994 (78.5)	1994 (78.5)
Ground-to-Hood	1346 (53)	1361 (54)	1367 (54)	1389 (55)	1367 (54)	1410 (55.5)	1367 (54)	1410 (55.5)
Ground-to-Steering Wheel Top	1593 (63)	1593 (63)	1615 (64)	1615 (64)	1666 (66)	1666 (66)	1666 (66)	1666 (66)
Ground-to-Seat Cushion Top								
Seat Raised	1186 (47)	1196 (47)	1209 (48)	1222 (48)	1234 (49)	1257 (49.5)	1234 (49)	1257 (49.5)
Seat Lowered	1059 (42)	1069 (42)	1082 (43)	1095 (43)	1107 (44)	1130 (44.5)	1107 (44)	1156 (44.5)
Rear Axle Centerline-to-ROPS Top	1786 (70)	1786 (70)	1786 (70)	1786 (70)	1786 (70)	1786 (70)	1786 (70)	1786 (70)
Rear Axle Centerline-to-Folded ROPS Top	1321 (52)	1321 (52)	1321 (52)	1321 (52)	1321 (52)	1321 (52)	13213 (52)	1321 (52)
Crop Clearance	457 (18)	401 (16)	478 (19)	429 (17)	478 (19)	450 (18)	478 (19)	450 (18)
Ground-to-Drawbar Top	381 (15)	381 (15)	404 (16)	404 (16)	452 (18)	452 (18)	452 (18)	452 (18)
Drawbar Thickness	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)
Front Axle Centerline-to-Hood Top	1003 (39.5)	902 (35.5)	1003 (39.5)	902 (35.5)	1003 (39.5)	902 (35.5)	1003 (39.5)	902 (35.5)

Continued on next page

	Tractor							
Dimension	**5225**		**5325**		**5425**		**5525**	
Straddle Mount	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**
Turning Radius with Brakes	2957 (116)	3109 (122) 3018[a] (119)[a]	2957 (116)	3109 (122) 3018[a] (119)[a]	3414 (134)	3536 (139) 3353[a] (132)[a]	3414 (134)	3536 (139) 3353[a] (132)[a]
Turning Radius without Brakes	3444 (136)	3810 (150) 3444[a] (136)[a]	3444 (136)	3810 (150) 3444[a] (136)[a]	3901 (154)	4359 (172) 3932[a] (155)[a]	3901 (154)	4359 (172) 3932[a] (155)[a]
Approximate Shipping Weight	1622 kg (3576 lb)	2093 kg (4616 lb)	1747 kg (3851 lb)	2219 kg (4891 lb)	1944 kg (4285 lb)	2415 kg (5323 lb)	2181 kg (4809 lb)	2653 kg (5849 lb)

[a] MFWD disengaged.

PK80954,0000813 –19–07DEC04–2/2

Machine Dimensions (5525 Series Hi-Crop Straddle Mount)

		Tractor
Dimension		5525 Hi-Crop
Straddle Mount		**MFWD** **mm** **(in.)**
Wheel Base		2177 (85.7)
Overall Length Including Draft Links		3848 (151.5)
Overall Width		
	Outside Edge of Tires	2377 (94)
	Rear Axle Flange-to-Rear Axle Flange	1638 (64.5)
Ground-to-ROPS Top		2807 (110.5)
Ground-to-Folded ROPS Top		2362 (93)
Ground-to-Canopy Top		2979 (117)
Ground-to Hood		1748 (69)
Ground-to-Steering Wheel Top		2022 (80)
Ground-to-Seat Cushion Top		
	Seat Raised	1595 (69)
	Seat Lowered	1494 (59)
Ground-to-Drawbar Top		813 (32)
Crop Clearance		648 (25.5)
Front Axle Centerline-to-Hood Top		902 (35.5)
Drawbar Thickness		33.0 (1.3)
Turning Radius with Brakes		3962[a] (156)[a]

[a] MFWD disengaged.

Continued on next page

	Tractor
Dimension	**5525 Hi-Crop**
Straddle Mount	**MFWD** **mm** **(in.)**
Turning Radius without Brakes	4221[a] (166)[a]
Approximate Shipping Weight	3241 kg (7145 lb)

[a] MFWD disengaged.

PK80954,0000814 –19–07DEC04–2/2

Machine Dimensions (Isolated Open Operator Station)

	Tractor							
Dimension	**5225**		**5325**		**5425**		**5525**	
Isolated Open Operator Station	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**
Wheel Base	2050 (81)	2050 (81)	2050 (81)	2050 (81)	2177 (86)	2177 (86)	2177 (86)	2177 (86)
Overall Length Including Draft Links	3477 (137)	3597 (142)	3500 (138)	3622 (143)	3848 (151.5)	3848 (151.5)	3848 (151.5)	3848 (151.5)
Overall Width								
Outside Edge of Tires	1801 (71)	1801 (71)	1842 (72.5)	1842 (72.5)	1882 (74)	1882 (74)	1882 (74)	1882 (74)
Rear Axle Flange-to-Rear Axle Flange	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)
MFWD Flange-to-MFWD Flange	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)	1643 (65)
Ground-to-ROPS Top	2583 (102)	2583 (102)	2606 (103)	2606 (103)	2657 (105)	2657 (105)	2657 (105)	2657 (105)
Ground-to-Canopy Top	—	—	—	—	—	—	NA	NA
Ground-to-Folded ROPS Top	2101 (83)	2101 (83)	2123 (84)	2123 (84)	2174 (86)	2174 (86)	2174 (86)	2174 (86)
Ground-to-Hood	1346 (53)	1361 (54)	1367 (54)	1389 (55)	1367 (54)	1410 (55.5)	1367 (54)	1410 (55.5)
Ground-to-Steering Wheel Top	1758 (69)	1758 (69)	1781 (70)	1781 (70)	1831 (72)	1831 (72)	1831 (72)	1831 (72)
Ground-to-Seat Cushion Top								
Seat Raised	1476 (58)	1476 (58)	1499 (59)	1499 (59)	1549 (61)	1549 (61)	1549 (61)	1549 (61)
Seat Lowered	1400 (55)	1400 (55)	1422 (56)	1422 (56)	1473 (58)	1473 (58)	1473 (58)	1473 (58)
Rear Axle Centerline-to-ROPS Top	1984 (78)	1984 (78)	1984 (78)	1984 (78)	1984 (78)	1984 (78)	1984 (78)	1984 (78)
Rear Axle Centerline-to-Folded ROPS Top	1501 (59)	1501 (59)	1501 (59)	1501 (59)	1501 (59)	1501 (59)	1501 (59)	1501 (59)
Crop Clearance	457 (18)	401 (16)	478 (19)	429 (17)	478 (19)	450 (18)	478 (19)	450 (18)
Ground-to-Drawbar Top	381 (15)	381 (15)	404 (16)	404 (16)	455 (18)	455 (18)	455 (18)	455 (18)

Continued on next page

PK80954,0000815 –19–07DEC04–1/2

	Tractor							
Dimension	**5225**		**5325**		**5425**		**5525**	
Isolated Open Operator Station	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**
Drawbar Thickness	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)
Front Axle Centerline-to-Hood Top	1003 (39.5)	902 (35)	1003 (39.5)	902 (35)	1003 (39.5)	902 (35)	1003 (39.5)	902 (35)
Turning Radius with Brakes	2957 (116)	3109 (122) 3018[a] (119)[a]	2957 (116)	3109 (122) 3018[a] (119)[a]	3414 (134)	3109 (122) 3353[a] (132)[a]	3414 (134)	3536 (139) 3353[a] (132)[a]
Turning Radius without Brakes	3444 (136)	3810 (150) 3444[a] (136)[a]	3444 (136)	3810 (150) 3444[a] (136)[a]	3901 (154)	3810 (150) 3932[a] (155)[a]	3901 (154)	4359 (172) 3932[a] (155)[a]
Approximate Shipping Weight	1765 kg (3891 lb)	2237 kg (4931 lb)	1890 kg (4166 lb)	2361 kg (5206 lb)	2087 kg (4600 lb)	2558 kg (5640 lb)	2324 kg (5124 lb)	2796 kg (6164 lb)

[a] MFWD disengaged.

PK80954,0000815 –19–07DEC04–2/2

Machine Dimensions (Cab)

	Tractor							
Dimension	**5225**		**5325**		**5425**		**5525, 5625 and 5603**	
Cab	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**
Wheel Base	2007 (79)	2032 (80)	2007 (79)	2032 (80)	2159 (85)	2184 (86)	2159 (85)	2184 (86)
Overall Length Including Draft Links	3543 (139.5)	3606 (142)	3543 (139.5)	3606 (142)	3696 (145.5)	3759 (148)	3696 (145.5)	3759 (148)
Overall Width								
(55.8 in.) Tread Setting	1763 (69)	1763 (69)	1796 (71)	1796 (71)	—	—	—	—
(60.4 in.) Tread Setting	—	—	—	—	—	—	1963 (77)	1963 (77)
(61.5 in.) Tread Setting	—	—	—	—	1991 (78)	1991 (78)	—	—
Axle Flange-to-Axle Flange	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)	1455 (57)
Cab Width								
Glass	1549 (61)	1549 (61)	1549 (61)	1549 (61)	1549 (61)	1549 (61)	1549 (61)	1549 (61)
Across Fenders	1801 (71)	1801 (71)	1801 (71)	1801 (71)	1801 (71)	1801 (71)	1801 (71)	1801 (71)
Cab Roof	1707 (67)	1707 (67)	1707 (67)	1707 (67)	1707 (67)	1707 (67)	1707 (67)	1707 (67)
Ground-to-Cab Top	2477 (97.5)	2477 (97.5)	2499 (98)	2499 (98)	2550 (100)	2550 (100)	2550 (100)	2550 (100)
Rear Axle Centerline-to-Cab Top	1877 (74)	1877 (74)	1877 (74)	1877 (74)	1877 (74)	1877 (74)	1877 (74)	1877 (74)
Crop Clearance	476 (18.75)	349 (13.75)	483 (19)	381 (15)	483 (19)	400 (15.75)	483 (19)	400 (15.75)
Ground-to-Drawbar Top	419 (16.5)	419 (16.5)	432 (17)	432 (17)	514 (20.25)	514 (20.25)	514 (20.25)	514 (20.25)
Drawbar Thickness	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)	33.0 (1.3)
Front Axle Centerline-to-Hood Top	1003.3 (39.5)	911.7 (35.5)	1003.3 (39.5)	901.7 (35.5)	1003.3 (39.5)	901.7 (35.5)	1003.3 (39.5)	901.7 (35.5)
Turning Radius with Brakes	2957 (116.4)	3109 (122.4) 3017.2[a] (118.8)[a]	2957 (116.4)	3109 (122.4) 3017.2[a] (118.8)[a]	2957 (116.4)	3109 (122.4) 3017.2[a] (118.8)[a]	3414 (134.4)	3535 (139.2) 3017.2[a] (118.8)[a]

[a] MFWD disengaged.

Continued on next page

	Tractor							
Dimension	**5225**		**5325**		**5425**		**5525, 5625 and 5603**	
Cab	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**	**2WD mm (in.)**	**MFWD mm (in.)**
Turning Radius without Brakes	3444 (135.6)	3810 (150.0) 3444[a] (135.6)[a]	3444 (135.6)	3810 (150.0) 3444[a] (135.6)[a]	3444 (135.6)	3810 (150.0) 3444[a] (135.6)[a]	3901 (153.6)	4359 (171.6) 3444[a] (135.6)[a]
Approximate Shipping Weight	2264 kg (4991 lb)	2736 kg (6031 lb)	2389 kg (5266 lb)	2860 kg (6306 lb)	2585 kg (5700 lb)	3057 kg (6740 lb)	2823 kg (6224 lb)	3295 kg (7264 lb)

[a] MFWD disengaged.

PK80954,0000816 –19–02NOV06–2/2

Repair Specifications

Section 20—Engine Repair

NOTE: For all repair specifications use CTM301 for 3.0 L engines or CTM104 for 4.5 L engines.

Item	Measurement	Specification
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (4-cylinder)	Torque	260 N•m (192 lb-ft)
Clutch Housing-to-Engine Cap Screw (4-Cylinder)	Torque	430 N•m (317 lb-ft)
Clutch Housing-to-Side Frame Cap Screw (5-Cylinder)	Torque	430 N•m (317 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (5-Cylinder)	Torque	260 N•m (192 lb-ft)
Side Frame-to-Engine Cap Screw (5-Cylinder)	Torque	340 N•m (251 lb-ft)
Front Support-to-Side Frame Cap Screw (5-Cylinder)	Torque	430 N•m (317 lb-ft)
Engine-to-Front Support Top Cap Screw (4-Cylinder)	Torque	318 N•m (235 lb-ft)
Engine-to-Front Support Lower Cap Screw (4-Cylinder)	Torque	162 N•m (119 lb-ft)
Engine-to-Front Support Nut (4-Cylinder)	Torque	318 N•m (235 lb-ft)
Belt Tensioner	Tension	18—22 N•m (13—16 lb-ft)

Section 30—Fuel and Air Repair

NOTE: For all fuel injection nozzle and turbocharger repair use CTM301 for 3.0 L engines or CTM104 for 4.5 L engines

Item	Measurement	Specification
Fuel Tank Rear Bracket Cap Screws (Isolated Open Operator Station and Cab Tractors)	Torque	350 N•m (255 lb-ft)

Continued on next page

Item	Measurement	Specification
Fuel Tank Front Bracket Cap Screws (Isolated Open Operator Station and Cab Tractors)	Torque	80 N•m (60 lb-ft)
Turbocharger Oil Drain Line—4-Cylinder	Torque	24 N•m (18 lb-ft)
Turbocharger Oil Inlet Line—4-Cylinder	Torque	24 N•m (18 lb-ft)
Turbocharger Mounting Cap Screws—4-Cylinder	Torque	70 N•m (52 lb-ft)
Turbocharger Mounting Cap Screws—5-Cylinder	Torque	32 N•m (22 lb-ft)
Turbocharger Oil Drain Line—5-Cylinder	Torque	36 N•m (26 lb-ft)
Turbocharger Oil Inlet Line—5-Cylinder	Torque	19 N•m (14 lb-ft)

Section 40—Electrical System

- For starter repair—Use CTM77

Section 50—Power Train Repair

Item	Measurement	Specification
Clutch Housing-to-Engine M20 Cap Screw	Torque	430 N•m (317 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw	Torque	260 N•m (192 lb-ft)
PTO Clutch Disk	Thickness	7.6—6.6 mm (0.300—0.260 in.)
Clutch Assembly Mounting Cap Screw	Torque	36 N•m (27 lb-ft)
Traction Clutch Disk	Thickness	10—6 mm (0.395—0.235 in.)
PTO Clutch Pressure Plate	Thickness	16.2 mm (0.638 in.) minimum
Traction Clutch Front Pressure Plate	Thickness	26.7 mm (1.051 in.) minimum

Continued on next page

Item	**Measurement**	**Specification**
Traction Clutch Rear Pressure Plate	Thickness	15.8 mm (0.622 in.) minimum
Clutch Spring Washer	Height	13 mm (0.512 in.)
Clutch Yoke Cap Screw	Torque	65 N•m (48 lb-ft)
Clutch-to-Flywheel Cap Screw	Torque	36 N•m (27 lb-ft)
Single Stage Clutch Pressure Plate	Minimum Thickness	16.2 mm (0.638 in.)
Single Stage Clutch Disk	Minimum Thickness	6.6 mm (0.260 in.)
Clutch Release Mechanism Cap Screw	Torque	26 N•m (20 lb-ft)
PTO Clutch Release Shaft Cap Screw	Torque	65 N•m (48 lb-ft)
Transmission Pump Cap Screw	Torque	26 N•m (20 lb-ft)
Control Valve Cap Screw	Torque	26 N•m (20 lb-ft)
Hydraulic Line-to-Control Valve	Torque	30 N•m (22 lb-ft)
M22 Hydraulic Banjo Fitting	Torque	118 N•m (87 lb-ft)
M18 Hydraulic Banjo Fitting	Torque	74 N•m (54 lb-ft)
M14 Hydraulic Banjo Fitting	Torque	44 N•m (32 lb-ft)
Plate-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)
Front Cover-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (4-Cylinder)	Torque	260 N•m (192 lb-ft)
Clutch Housing-to-Engine M20 Cap Screw (4-Cylinder)	Torque	430 N•m (317 lb-ft)
Mid-Plate-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)
Rear Plate-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)

Continued on next page

Item	Measurement	Specification
Lo Clutch Springs	Height	6.1 mm (0.240 in.)
Hi/Lo Clutch Disk	Minimum Thickness	2.04 mm (0.080 in.)
Hi/Lo Clutch Plate	Minimum Thickness	1.37 mm (0.054 in.)
Hi/Lo Clutch End Plate	Minimum Thickness	3.00 mm (0.118 in.)
Lo Clutch Outer Pin Plate	Minimum Thickness	4.30 mm (0.169 in.)
Hi Clutch Spring	Minimum Height	48.6 mm (1.913 in.)
Lo Clutch Cover Screws	Torque	9.8 N•m (87 lb-in.)
PR Clutch Disk	Minimum Thickness	2.7 mm (0.106 in.)
PR Clutch End Plate	Minimum Thickness	5.85 mm (0.230 in.)
PR Clutch Plate	Minimum Thickness	3.85 mm (0.151 in.)
Clutch Housing-to-Transmission Cap Screw	Torque	140 N•m (105 lb-ft)
Transmission-to-Differential Cap Screw	Torque	140 N•m (105 lb-ft)
Park Cam Cover Cap Screw	Torque	27 N•m (20 lb-ft)
Reverse Idler Shaft	Torque	132 N•m (97 lb-ft)
Transmission-to-Differential Cap Screw	Torque	140 N•m (105 lb-ft)
Park Pawl Cover Cap Screw	Torque	27 N•m (20 lb-ft)
PTO Drive Shaft Assembly Cap Screw	Torque	65 N•m (48 lb-ft)
PTO Inlet Port Banjo Fitting	Torque	44 N•m (32 lb-ft)
Lube Inlet Port Banjo Fitting	Torque	74 N•m (55 lb-ft)
Piston Spring	Minimum Height	38.5 mm (1.51 in.)
EH PTO Disk	Minimum Thickness	1.78 mm (0.070 in.)
EH PTO Clutch End Plate	Minimum Thickness	3.82 mm (0.150 in.)

Continued on next page

Item	**Measurement**	**Specification**
EH PTO Clutch Plate	Minimum Thickness	2.15 mm (0.084 in.)
EH PTO Valve Cap Screws	Torque	25 N•m (18 lb-ft)
Differential Cap Screw	Torque	58 N•m (43 lb-ft)
Case-to-Housing Cap Screw	Torque	95 N•m (70 lb-ft)
Ring Gear Cap Screw	Torque	78 N•m (58 lb-ft)
Differential Drive Shaft Spacer and Shims	Thickness	0.25—0.75 mm (0.010—0.030 in.) nominal
Differential Drive Shaft Nut	Torque	245—294 N•m (181—217 lb-ft)
Differential Drive Shaft Rolling Drag Starting	Force	0.22—0.26 N (0.791—0.935 oz-force)
Differential Drive Shaft Quill Cap Screw	Torque	52 N•m (38 lb-ft)
Differential Cone Point	Distance	17.5 ± 0.05 mm (0.688 ± 0.002 in.)
Differential Backlash	Distance	0.15—0.20 mm (0.006—0.008 in.)
Differential Quill	Angle	30°
Differential Cap Screw	Torque	58 N•m (43 lb-ft)
Final Drive Assembly Cap Screw	Torque	128 N•m (94 lb-ft)
Final Drive Housing	Rolling Drag Torque	9 N•m (80 lb-in.) increase above baseline
Bearing Cone	Temperature	150°C (300°F)
Hi-Crop Axle Assembly-to-Differential Housing Cap Screws	Torque	140 N•m (105 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)
Hi-Crop Final Drive Housing Cover Cap Screws	Torque	140 N•m (105 lb-ft)
Hi-Crop Final Drive-to-Axle Housing Cap Screws	Torque	140 N•m (105 lb-ft)

Continued on next page

PK80954,0000817 –19–07DEC04–5/12

Item	Measurement	Specification
MFWD Drop Gearbox Cap Screw	Torque	132 N•m (97 lb-ft)
MFWD Drop Gearbox Cover Cap Screw	Torque	26 N•m (230 lb-in.)
MFWD Drop Gearbox Nut	Torque	60 N•m (44 lb-ft)
MFWD Drive Shaft Guard Cap Screw	Torque	15 N•m (11 lb-ft)
MFWD Axle-to-Frame Cap Screw	Torque	650 N•m (479 lb-ft)
MFWD Front Wheel Cap Screw	Torque	300 N•m (220 lb-ft)
Creeper Assembly Cap Screw	Torque	50 N•m (37 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

Section 60—Steering and Brake Repair

Item	Measurement	Specification
Straight Steering Column Mounting Cap Screw	Torque	50 N•m (37 lb-ft)
Steering Wheel Nut—Straight Column	Torque	30 N•m (22 lb-ft)
Steering Column Mounting Cap Screw—Tilt/Telescoping Column	Torque	50 N•m (37 lb-ft)
Steering Wheel Nut—Tilt/Telescoping Column	Torque	30 N•m (22 lb-ft)
Steering Valve Mounting Cap Screw—Telescoping Column	Torque	30 N•m (22 lb-ft)
Steering Valve Cover Cap Screws	Torque	30 N•m (22 lb-ft)
Steering Cylinder Cap Screws—2WD Axle	Torque	200 N•m (147 lb-ft)
Steering Cylinder Mounting Clamp—MFWD Axle	Torque	70 N•m (52 lb-ft)
Ball Joint—2WD Axle	Torque	300 N•m (221 lb-ft)

Continued on next page

Item	Measurement	Specification
Tie Rod Sleeve Cap Screws—2WD Axle	Torque	90 N•m (66 lb-ft)
Tie Rod End Lock Nut—2WD Axle	Torque	165 N•m (122 lb-ft)
Ball Joint to Piston Rod—MFWD Axle	Torque	300 N•m (221 lb-ft)
Ball Joint Nut—MFWD Axle	Torque	120 N•m (89 lb-ft)
Tie Rod End Lock Nut—MFWD Axle	Torque	165 N•m (122 lb-ft)
Brake Valve Mounting Cap Screw	Torque	70 N•m (52 lb-ft)
Brake Valve Inlet Check Valve	Torque	73 N•m (54 lb-ft)
Pressure Equalizing Valve Plug	Torque	37 N•m (27 lb-ft)
Outlet Check Valve Spring Seat Fitting	Torque	92 N•m (68 lb-ft)
Retractor Spring-to-Piston	Torque	15 N•m (133 lb-in.)
Piston-to-Final Drive Housing Surface	Distance	12.4—12.8 mm (0.48—0.50 in.)

Section 70—Hydraulic Repair

Item	Measurement	Specification
Pick-Up Screen Cover Cap Screw	Torque	23 N•m (17 lb-ft)
Hydraulic Pump Mounting Cap Screw—5-Cylinder Engine	Torque	125 N•m (92 lb-ft)
Hydraulic Pump Body Cap Screw—5-Cylinder Engine	Torque	48 N•m (35 lb-ft)
Hydraulic Pump Rear Outlet Fitting—5-Cylinder Engine	Torque	28 N•m (21 lb-ft)
Hydraulic Pump Front Outlet Fitting—5-Cylinder Engine	Torque	46 N•m (34 lb-ft)
Gear Retaining Nut—5-Cylinder Engine	Torque	50 N•m (37 lb-ft)

Continued on next page

Item	Measurement	Specification
Hydraulic Pump Inlet Manifold Socket Head Cap Screws—5-Cylinder Engine	Torque	25 N•m (18 lb-ft)
Hydraulic Pump Mounting Cap Screw—4-Cylinder Engine	Torque	125 N•m (92 lb-ft)
Hydraulic Pump Body Cap Screw—4-Cylinder Engine	Torque	68 N•m (50 lb-ft)
Hydraulic Pump Rear Outlet Fitting—4-Cylinder Engine	Torque	28 N•m (21 lb-ft)
Hydraulic Pump Front Outlet Fitting—4-Cylinder Engine	Torque	46 N•m (34 lb-ft)
Hydraulic Pump Gear Nut—4-Cylinder Engine	Torque	90 N•m (66 lb-ft)
Hydraulic Pump Inlet Manifold Socket Head Cap Screws—4-Cylinder Engine	Torque	25 N•m (18 lb-ft)
Hydraulic Oil Filter/Manifold Cap Screw	Torque	55 N•m (41 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)
Main Relief Valve—Mechanical RCV	Torque	62 N•m (46 lb-ft)
Hitch Relief Valve—Mechanical RCV	Torque	62 N•m (46 lb-ft)
Rockshaft Control Valve-to-Inlet Housing Socket Head Cap Screw	Torque	28 N•m (21 lb-ft)
RCV Inlet Housing Hydraulic Line Fitting	Torque	102 N•m (75 lb-ft)
RCV Inlet Housing Hydraulic Line Nut	Torque	69 N•m (51 lb-ft)
SCV Control Cable Steel Nut	Torque	25 N•m (221 lb-in.)
SCV Hydraulic Line Nut	Torque	69 N•m (51 lb-ft)
Rockshaft Control Valve Inlet Housing Cap Screws	Torque	30 N•m (22 lb-ft)

Continued on next page

Item	**Measurement**	**Specification**
Compensator Valve Plug	Torque	45 N•m (33 lb-ft)
Manual Override Valve Packing Nut	Torque	14 N•m (124 lb-in.)
Solenoid Valve Poppet	Torque	100 N•m (74 lb-ft)
Coil Retaining Nut	Torque	2.3 N•m (20 lb-in.)
System Relief Valve	Torque	81 N•m (60 lb-ft)
Load Check Valve Plug	Torque	47 N•m (35 lb-ft)
Load Sense Relief Valve Jam Nut	Torque	9.5 N•m (84 lb-in.)
Work Port Relief Valve	Torque	34 N•m (25 lb-ft)
Load Sense Bleed Orifice	Torque	9.5 N•m (84 lb-in.)
Electro-Hydraulic Rockshaft Control Valve-to-Rockshaft Case Cap Screws	Torque	30 N•m (22 lb-ft)
Rockshaft Case-to-Differential Housing Cap Screws	Torque	125 N•m (92 lb-ft)
Rockshaft Bushing Outer Edge-to-Edge of Bore	Distance	7 mm (0.283 in.)
Draft Sensing Support Mounting Socket Head Cap Screw	Torque	375 N•m (277 lb-ft)
SCV Mounting Cap Screws	Torque	55 N•m (41 lb-ft)
Cable Sleeve	Torque	16—19 N•m (144—168 lb-in.)
Cable Nut	Torque	16—19 N•m (144—168 lb-in.)
Plug	Torque	26—30 N•m (19—22 lb-ft)
Spool Cap Socket Head Cap Screw	Torque	12—15 N•m (106—133 lb-in.)
End Plate Socket Head Cap Screw	Torque	12—15 N•m (106—133 lb-in.)
SCV Fitting Plug	Torque	57 N•m (42 lb-ft)
Power Beyond Plug	Torque	54—61 N•m (40—45 lb-ft)

Continued on next page

Item	**Measurement**	**Specification**
Load Check Cap	Torque	34—41 N•m (25—30 lb-ft)
Housing Plugs	Torque	20—27 N•m (15 lb-ft)
Load Check Flow Control Valve	Torque	34—41 N•m (25—30 lb-ft)
Compensator Valve	Torque	20—24 N•m (15—18 lb-ft)
Detent Valve	Torque	47—54 N•m (35—40 lb-ft)
Detent Knob Nut	Torque	4—5 N•m (35—44 lb-in.)
Valve Housing End Cap Socket Head Cap Screws	Torque	12—15 N•m (106—133 lb-in.)
Clevis End Adapter	Torque	26—30 N•m (19—22 lb-ft)
Spool End Cap Socket Head Cap Screws	Torque	12—15 N•m (106—133 lb-in.)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)
SCV Coupler	Torque	69 N•m (51 lb-ft)
Mid-Mount Control Valve Cap Screws	Torque	55 N•m (41 lb-ft.)
Mid-Mount Control Valve Line Nut	Torque	69 N•m (50 lb-ft)
Cable Bracket Cap Screw	Torque	15 N•m (11 lb-ft)
Plug	Torque	26—30 N•m (19—22 lb-ft)
Spool Cap Socket Head Cap Screw	Torque	12—15 N•m (106—133 lb-in.)
Load Check Cap	Torque	34—41 N•m (25—30 lb-ft)
Load Check Flow Control Valve	Torque	34—41 N•m (25—30 lb-ft)
Compensator Valve	Torque	20—27 N•m (15—20 lb-ft)
Housing Plug	Torque	20—27 N•m (15 lb-ft)
Adapter Plate Socket Head Cap Screws	Torque	12—15 N•m (106—133 lb-in.)
Solenoid Valve Stem	Torque	20—27 N•m (15—20 lb-ft)

Continued on next page

Item	Measurement	Specification
Coil Nut	Torque	3—4 N•m (27—35 lb-in.)
SCV Coupler	Torque	69 N•m (51 lb-ft)
Plug	Torque	26—30 N•m (19—22 lb-ft)
Spool Cap Socket Head Cap Screw	Torque	12—15 N•m (106—133 lb-in.)
Load Check Cap	Torque	34—41 N•m (25—30 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

Section 80—Miscellaneous Repair

Item	Measurement	Specification
Axle	End Play	0.8 mm (0.030 in.)
2WD Axle Pivot Pin Retainer Cap Screw	Torque	135 N•m (100 lb-ft)
Front Wheel Cap Screw	Torque	175 N•m (129 lb-ft)
Tie Rod End Nut	Torque	165 N•m (122 lb-ft)
Front Wheel Cap Screw	Torque	175 N•m (129 lb-ft)
Draft Link Support Cap Screw	Torque	200 N•m (148 lb-ft)
Stabilizer Bracket Cap Screw (Fixed Draft Links)	Torque	350 N•m (258 lb-ft)
Stabilizer Bracket Cap Screw (Telescoping Draft Links)	Torque	300 N•m (221 lb-ft)
Draw Bar Support Rear Cap Screw	Torque	200 N•m (148 lb-ft)
Draw Bar Support Bottom Cap Screw	Torque	310 N•m (229 lb-ft)
Draw Bar Support Side Cap Screw	Torque	200 N•m (148 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

Continued on next page

Section 90—Operator Station Repair

Item	Measurement	Specification
Seat Support Cap Screw	Torque	125 N•m (92 lb-ft)
ROLL-GARD™ Cap Screw	Torque	500 N•m (369 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)
Isolated Open Operator Station Mounting Cap Screw	Torque	80 N•m (59 lb-ft)

ROLL-GARD is a trademark of Deere & Company

PK80954,0000817 –19–07DEC04–12/12

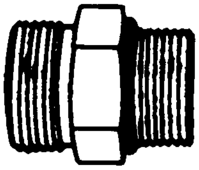
Service Recommendations for O-Ring Boss Fittings

Straight Fitting

1. Inspect O-ring boss seat for dirt or defects.

2. Lubricate O-ring with petroleum jelly. Place electrical tape over threads to protect O-ring. Slide O-ring over tape and into O-ring groove of fitting. Remove tape.

3. Tighten fitting to torque value shown on chart.

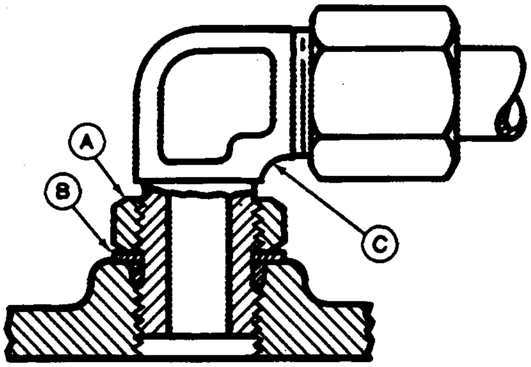


T6243AE –UN–18OCT88

Continued on next page

04T,90,K66 –19–29SEP99–1/2

Angle Fitting



T6520AB –UN–18OCT88

1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.
2. Turn fitting into threaded boss until back-up washer contacts face of boss.
3. Turn fitting head-end counterclockwise to proper index (maximum of one turn).

NOTE: Do not allow hoses to twist when tightening fittings.

4. Hold fitting head-end with a wrench and tighten locknut and back-up washer to proper torque value.

STRAIGHT FITTING OR SPECIAL NUT TORQUE CHART		
Thread Size	**N•m**	**lb-ft**
3/8-24 UNF	8	6
7/16-20 UNF	12	9
1/2-20 UNF	16	12
9/16-18 UNF	24	18
3/4-16 UNF	46	34
7/8-14 UNF	62	46
1-1/16-12 UN	102	75
1-3/16-12 UN	122	90
1-5/16-12 UN	142	105
1-5/8-12 UN	190	140
1-7/8-12 UN	217	160
NOTE: Torque tolerance is ± 10%.		

04T,90,K66 –19–29SEP99–2/2

Service Recommendations For Flat Face O-Ring Seal Fittings

1. Inspect the fitting sealing surfaces and O-ring. They must be free of dirt or defects.

2. Lubricate O-rings and install into grove using petroleum jelly to hold in place.

3. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.

4. Tighten fitting or nut to torque value shown on the chart. Do not allow hoses to twist when tightening fittings, use backup wrench on straight hose couplings.

IMPORTANT: Tighten fittings to 150% of listed torque value if indexing is necessary or if fitting is attached to an actuating devise.

Tighten fittings to 50% of listed torque value if used in aluminum housing.

FLAT FACE O-RING SEAL FITTING TORQUE*

Nomial Tube O.D.		Thread Size	Swivel Nut		Bulkhead Nut	
mm	in.	in.	N•m	lb-ft	N•m	lb-ft
6.35	0.250	9/16-18	16	12	12	9
9.52	0.375	11/16-16	24	18	24	18
12.70	0.500	13/16-16	50	37	46	34
15.88	0.625	1-14	69	51	62	46
19.05	0.750	1 3/16-12	102	75	102	75
22.22	0.875	1 3/16-12	102	75	102	75
25.40	1.000	1 7/16-12	142	105	142	105
31.75	1.250	1 11/16-12	190	140	190	140
38.10	1.500	2-12	217	160	217	160

*Torque tolerance is +15 -20% unless otherwise specified.

Stud End O-ring Seal Torque for Straight and Adjustable Fittings*

Thread Size	Straight Hex Size	Locknut Hex Size	Straight Fitting or Locknut Toque	
Inch	Inch	Inch	N•m	lb-ft
3/8-24	5/8	9/16	12	9
7/16-20	5/8	5/8	21	15
1/2-20	3/4	11/16	26	19
9/16-18	3/4	3/4	34	25
3/4-16	7/8	15/16	73	55
7/8-14	1 1/16	1 1/16	104	76
1 1/16-12	1 1/4	1 3/8	176	130
1 3/16-12	1 3/8	1 1/2	230	170
1 5/16-12	1 1/2	1 5/8	285	210

*Torque tolerance is +15 -20% unless otherwise specified.

04T,90,K67 –19–02MAR00–1/1

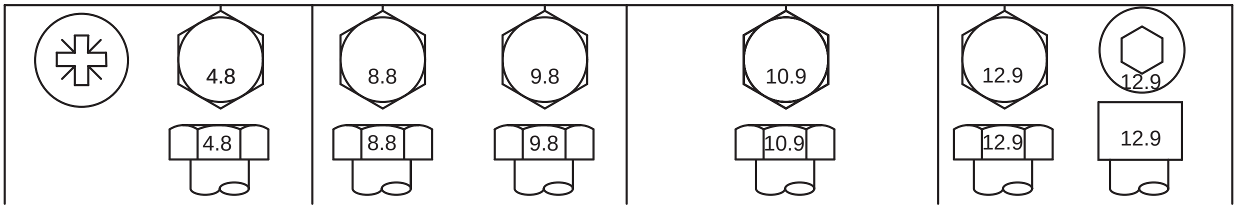
Metric Cap Screw Torque Values—Grade 7

NOTE: When bolting aluminum parts, tighten to 80% of torque specified in table.

Size	N•m	(lb-ft)
M6	9.5—12.2	(7—9)
M8	20.3—27.1	(15—20)
M10	47.5—54.2	(35—40)
M12	81.4—94.9	(60—70)
M14	128.8—146.4	(95—108)
M16	210.2—240	(155—177)

CED,OUO1085,12 –19–31JUL00–1/1

Metric Bolt and Screw Torque Values



TS1670 –UN–01MAY03

Bolt or	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
Screw	Lubricated[a]		Dry[b]		Lubricated[a]		Dry[b]		Lubricated[a]		Dry[b]		Lubricated[a]		Dry[b]	
Size	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N•m	lb-ft	N•m	lb-ft	N•m	lb-ft								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N•m	lb-ft														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

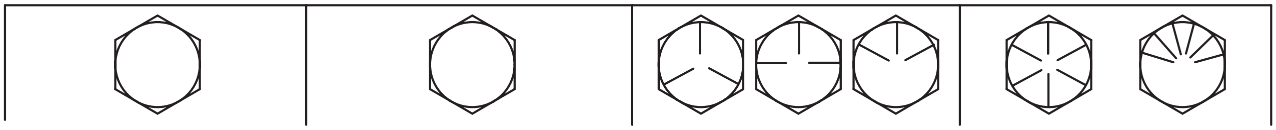
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

[a] "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C zinc flake coating.

[b] "Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B zinc flake coating.

DX,TORQ2 –19–24APR03–1/1

Unified Inch Bolt and Screw Torque Values



TS1671 –UN–01MAY03

Bolt or	SAE Grade 1				SAE Grade 2[a]				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
Screw	Lubricated[b]		Dry[c]		Lubricated[b]		Dry[c]		Lubricated[b]		Dry[c]		Lubricated[b]		Dry[c]	
Size	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in
1/4	3.7	33	4.7	42	6	53	7.5	66	9.5	84	12	106	13.5	120	17	150
													N•m	lb-ft	N•m	lb-ft
5/16	7.7	68	9.8	86	12	106	15.5	137	19.5	172	25	221	28	20.5	35	26
									N•m	lb-ft	N•m	lb-ft				
3/8	13.5	120	17.5	155	22	194	27	240	35	26	44	32.5	49	36	63	46
			N•m	lb-ft	N•m	lb-ft	N•m	lb-ft								
7/16	22	194	28	20.5	35	26	44	32.5	56	41	70	52	80	59	100	74
	N•m	lb-ft														
1/2	34	25	42	31	53	39	67	49	85	63	110	80	120	88	155	115
9/16	48	35.5	60	45	76	56	95	70	125	92	155	115	175	130	220	165
5/8	67	49	85	63	105	77	135	100	170	125	215	160	240	175	305	225
3/4	120	88	150	110	190	140	240	175	300	220	380	280	425	315	540	400
7/8	190	140	240	175	190	140	240	175	490	360	615	455	690	510	870	640
1	285	210	360	265	285	210	360	265	730	540	920	680	1030	760	1300	960
1-1/8	400	300	510	375	400	300	510	375	910	670	1150	850	1450	1075	1850	1350
1-1/4	570	420	725	535	570	420	725	535	1280	945	1630	1200	2050	1500	2600	1920
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2140	1580	2700	2000	3400	2500
1-1/2	990	730	1250	930	990	730	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application. Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Replace fasteners with the same or higher grade. If higher grade fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

[a] Grade 2 applies for hex cap screws (not hex bolts) up to 6. in (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

[b] "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C zinc flake coating.

[c] "Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B zinc flake coating.

DX,TORQ1 –19–24APR03–1/1

Abbreviations

NOTE: Abbreviations are used in place of some words.

- CTM—Component Technical Manual
- ID—Inside Diameter
- OD—Outside Diameter
- SCV—Selective Control Valve
- MFWD—Mechanical Front-Wheel Drive
- PTO—Power Take-Off
- SMV—Slow Moving Vehicle
- PR—POWRREVERSER™
- SS—SYNCSHUTTLE™
- RCV—Rockshaft Control Valve
- IOOS—Isolated Open Operator Station
- SM—Straddle Mount
- VEC—Vehicle Electrical Center
- ECH—Electro-Hydraulic Controller
- EH—Electro-Hydraulic

POWRREVERSER is a trademark of Deere & Company
SYNCSHUTTLE is a trademark of Deere & Company

PK80954,000081D –19–07DEC04–1/1

Diesel Fuel

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended.

Required fuel properties

In all cases, the fuel shall meet the following properties:

Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20°C (-4°F) or elevations above 1500 m (5000 ft).

Cold Filter Plugging Point (CFPP) below the expected low temperature OR **Cloud Point** at least 5°C (9°F) below the expected low temperature.

Fuel lubricity should pass a minimum level of 3100 grams as measured by ASTM D6078 or maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

Sulfur content:

- Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.
- Use of diesel fuel with sulfur content less than 0.10% (1000 ppm) is STRONGLY recommended.
- Use of diesel fuel with sulfur content 0.10% (1000 ppm to 0.50% (5000 ppm) may result in REDUCED oil and filter change intervals.
- BEFORE using diesel fuel with sulfur content greater than 0.50% (5000 ppm), contact your John Deere dealer.
- DO NOT use diesel fuel with sulfur content greater than 1.0%.

IMPORTANT: **Do not mix used diesel engine oil or any other type of lubricating oil with diesel fuel.**

IMPORTANT: **Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.**

DX,FUEL1 –19–17NOV05–1/1

Handling and Storing Diesel Fuel

CAUTION: Handle fuel carefully. Do not fill the fuel tank when engine is running.

DO NOT smoke while you fill the fuel tank or service the fuel system.

Fill the fuel tank at the end of each day’s operation to prevent water condensation and freezing during cold weather.

Keep all storage tanks as full as practicable to minimize condensation.

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering.

Monitor water content of the fuel regularly.

When using bio-diesel fuel, the fuel filter may require more frequent replacement due to premature plugging.

Check engine oil level daily prior to starting engine. A rising oil level may indicate fuel dilution of the engine oil.

IMPORTANT: The fuel tank is vented through the filler cap. If a new filler cap is required, always replace it with an original vented cap.

When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel and prevent water condensation. Contact your fuel supplier for recommendations.

DX,FUEL4 –19–19DEC03–1/1

Do Not Use Galvanized Containers

IMPORTANT: Diesel fuel stored in galvanized containers reacts with zinc coating on the container to form zinc flakes. If fuel contains water, a zinc gel will also form. The gel and flakes will quickly plug fuel filters and damage fuel injectors and fuel pumps.

DO NOT use a galvanized container to store diesel fuel.

Store fuel in:

- plastic containers.
- aluminum containers.
- specially coated steel containers made for diesel fuel.

DO NOT use brass-coated containers: brass is an alloy of copper and zinc.

JG31785,0000175 –19–11NOV04–1/1

Lubricity of Diesel Fuel

Most diesel fuels manufactured in the United States, Canada, and the European Union have adequate lubricity to ensure proper operation and durability of fuel injection system components. However, diesel fuels manufactured in some areas of the world may lack the necessary lubricity.

IMPORTANT: Make sure the diesel fuel used in your machine demonstrates good lubricity characteristics.

Fuel lubricity should pass a minimum load level of 3100 grams as measured by ASTM D6078 or a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

If fuel of low or unknown lubricity is used, add John Deere PREMIUM DIESEL FUEL CONDITIONER (or equivalent) at the specified concentration.

DX,FUEL5 –19–27OCT05–1/1

Testing Diesel Fuel

DIESELSCAN™ is a John Deere fuel analysis program that can be used to monitor the quality of your fuel. The DIESELSCAN analysis verifies fuel type, cleanliness, water content, suitability for cold weather operation, and whether the fuel meets specifications.

Check with your John Deere dealer for availability of DIESELSCAN kits.

DIESELSCAN is a trademark of Deere & Company

DX,FUEL6 –19–14NOV05–1/1

Bio-Diesel Fuel

Consult your local fuel distributor for properties of the bio-diesel fuel available in your area.

Bio-diesel fuels may be used ONLY if the bio-diesel fuel properties meet the latest edition of ASTM D6751, EN 14214, or equivalent specification.

It is recommended to purchase bio-diesel fuel blended with B100 from a BQ-9000 Accredited Producer or a BQ-9000 Certified Marketer as recommended by the National Bio-diesel Board.

The maximum allowable bio-diesel concentration is a 5% blend (also known as B5) in petroleum diesel fuel. It has been found that bio-diesel fuels may improve lubricity in concentrations up to this 5% blend.

When using a blend of bio-diesel fuel, the engine oil level must be checked daily when the air temperature is –10°C (14°F) or lower. If oil becomes diluted with fuel, shorten oil change intervals accordingly.

IMPORTANT: Raw pressed vegetable oils are NOT acceptable for use as fuel in any concentration in John Deere engines.

These oils do not burn completely, and will cause engine failure by leaving deposits on injectors and in the combustion chamber.

A major environmental benefit of bio-diesel fuel is its ability to biodegrade. This makes proper storage and handling of bio-diesel fuel especially important. Areas of concern include:

- Quality of new fuel
- Water content of the fuel
- Problems due to aging of the fuel

Potential problems resulting from deficiencies in the above areas when using bio-diesel fuel in concentrations above 5% may lead to the following symptoms:

- Power loss and deterioration of performance
- Fuel leakage
- Corrosion of fuel injection equipment
- Coked and/or blocked injector nozzles, resulting in engine misfire
- Filter plugging
- Lacquering and/or seizure of internal components
- Sludge and sediments
- Reduced service life of engine components

Consult your fuel supplier for additives to improve storage and performance of bio-diesel fuels.

DX,FUEL7 –19–14NOV05–1/1

Filling Fuel Tank

TS202 –UN–23AUG88

CAUTION: Handle fuel with care: It is highly flammable. DO NOT refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of accumulated trash, grease and debris. Always clean up spilled fuel.

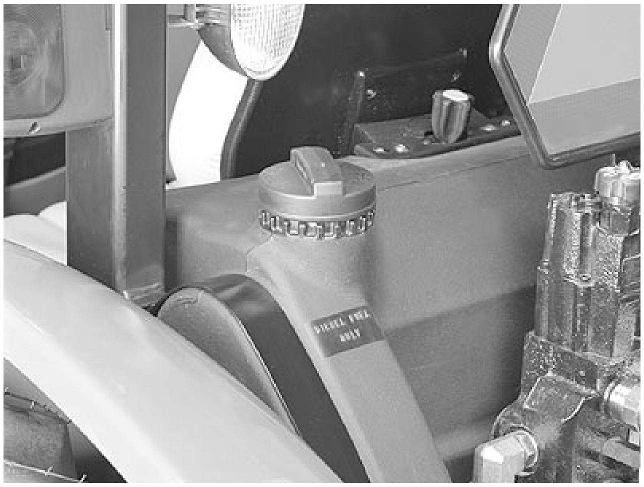
Fill fuel tank at end of each day's operation. This prevents condensation in tank as moist air cools.

Specification

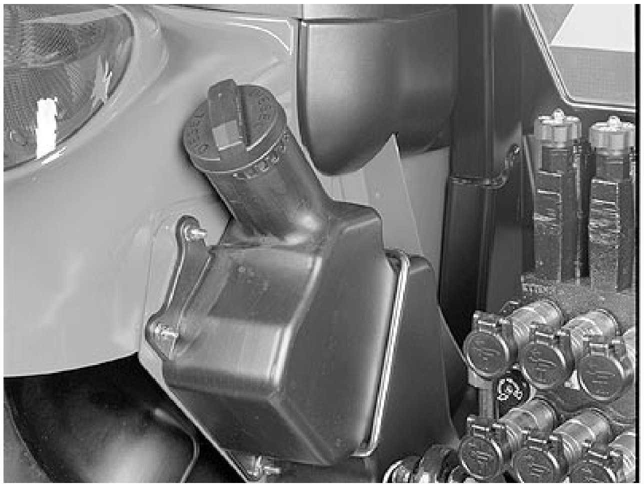
Straddle Mount and Hi-Crop—Capacity	96.5 L (25.5 gal)
Cab and IOOS—Capacity	126.8 L (33.5 gal)

IMPORTANT: The fuel tank uses a vented filler cap. If a new filler cap is required, always replace it with a vented cap.

NOTE: To reduce fuel gelling and to control wax separation during cold weather, John Deere Fuel Flow Improver, or equivalent, may be added to fuel or bulk storage tank.


LV09179 –UN–15JUL04

Straddle Mount and Hi-Crop


LV09178 –UN–15JUL04

Cab and IOOS

OUMX005,00018D3 –19–14JUL04–1/1

Diesel Engine Break-In Oil (5425, 5525, 5625 and 5603)

New engines are filled at the factory with John Deere ENGINE BREAK-IN OIL. During the break-in period, add John Deere ENGINE BREAK-IN OIL as needed to maintain the specified oil level.

Change the oil and filter after the first 100 hours of operation of a new or rebuilt engine.

After engine overhaul, fill the engine with John Deere ENGINE BREAK-IN OIL.

If John Deere ENGINE BREAK-IN OIL is not available, use a diesel engine oil meeting one of the following during the first 100 hours of operation:

- API Service Classification CE
- API Service Classification CD
- API Service Classification CC
- ACEA Oil Sequence E2
- ACEA Oil Sequence E1

After the break-in period, use John Deere PLUS-50™ or other diesel engine oil as recommended in this manual.

IMPORTANT: Do not use PLUS-50 oil or engine oils meeting any of the following during the first 100 hours of operaton of a new or rebuilt eninge:

API CI-4
API CH-4
API CG-4
API CF-4
API CF-2
API CF
ACEA E5
ACEA E4
ACEA E3

These oils will not allow the engine to break-in properly.

PLUS-50 is a trademark of Deere & Company.

OUMX005,00019A6 –19–02NOV06–1/1

Diesel Engine Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

John Deere PLUS-50™ oil is preferred.

Oils meeting one of the following specifications are also recommended:

- ACEA Oil Sequence E7
- ACEA Oil Sequence E6
- ACEA Oil Sequence E5
- ACEA Oil Sequence E4

Extended service intervals may apply when John Deere PLUS-50, ACEA E7, ACEA E6, ACEA E5, or ACEA E4 engine oils are used. Consult your John Deere dealer for more information.

Other oils may be used if they meet one or more of the following:

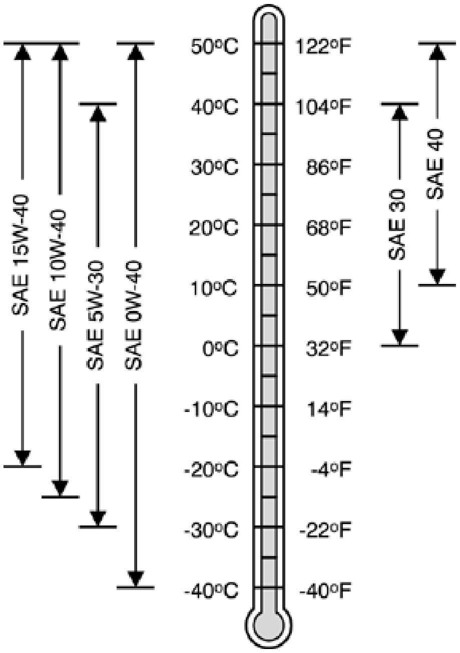
- John Deere TORQ-GARD SUPREME™
- API Service Category CJ-4
- API Service Category CI-4 PLUS
- API Service Category CI-4
- API Service Category CH-4
- API Service Category CG-4
- API Service Category CF-4
- ACEA Oil Sequence E3
- ACEA Oil Sequence E2

If oils meeting API CG-4, API CF-4, or ACEA E2 are used, reduce the service interval by 50%.

Multi-viscosity diesel engine oils are preferred.

Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.

If diesel fuel with sulfur content greater than 0.50% (5000 ppm) is used, reduce the service interval by 50%.



TS1681 –UN–09OCT06

Oil Viscosities for Air Temperature Ranges

PLUS-50 is a trademark of Deere & Company
TORQ-GARD SUPREME is a trademark of Deere & Company

Continued on next page

DO NOT use diesel fuel with sulfur content greater than 1.00% (10 000 ppm).

DX,ENOIL –19–13SEP06–2/2

Oil Filters

Filtration of oils is critical to proper operation and lubrication.

Always change filters regularly as specified in this manual.

Use filters meeting John Deere performance specifications.

DX,FILT –19–18MAR96–1/1

Diesel Engine Coolant

The engine cooling system is filled to provide year-round protection against corrosion and cylinder liner pitting, and winter freeze protection to -37°C (-34°F). If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

John Deere COOL-GARD™ Prediluted Coolant is preferred for service.

John Deere COOL-GARD Prediluted Coolant is available in a concentration of either 50% ethylene glycol or 55% propylene glycol.

Additional recommended coolants

The following engine coolant is also recommended:

- John Deere COOL-GARD Coolant Concentrate in a 40% to 60% mixture of concentrate with quality water.

John Deere COOL-GARD coolants do not require use of supplemental coolant additives, except for periodic replenishment of additives during the drain interval.

Other fully formulated coolants

Other fully formulated low silicate ethylene or propylene glycol base coolants for heavy-duty engines may be used if they meet one of the following specifications:

- ASTM D6210 prediluted (50%) coolant
- ASTM D6210 coolant concentrate in a 40% to 60% mixture of concentrate with quality water

Coolants meeting ASTM D6210 do not require use of supplemental coolant additives, except for periodic replenishment of additives during the drain interval.

Coolants requiring supplemental coolant additives

Other low silicate ethylene glycol base coolants for heavy-duty engines may also be used if they meet one of the following specifications:

- ASTM D4985 ethylene glycol base prediluted (50%) coolant
- ASTM D4985 ethylene glycol base coolant concentrate in a 40% to 60% mixture of concentrate with quality water

Coolants meeting ASTM D4985 require an initial charge of supplemental coolant additives, formulated for protection of heavy duty diesel engines against corrosion and cylinder liner erosion and pitting. They also require periodic replenishment of additives during the drain interval.

Other coolants

It is possible that neither John Deere COOL-GARD nor coolants meeting one of the coolant standards listed above is available in the geographical area where service is performed. If these coolants are unavailable, use a coolant concentrate or prediluted coolant with a quality additive package that provides cylinder liner cavitation protection and protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion.

The additive package must be part of one of the following coolant mixtures:

- ethylene glycol or propylene glycol base prediluted (40% to 60%) coolant
- ethylene glycol or propylene glycol base coolant concentrate in a 40% to 60% mixture of concentrate with quality water

Water quality

COOL-GARD is a trademark of Deere & Company

Continued on next page

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

IMPORTANT: Do not use cooling system sealing additives or antifreeze that contains sealing additives.

IMPORTANT: Do not mix ethylene glycol and propylene glycol base coolants.

DX,COOL3 –19–27OCT05–2/2

Operating in Warm Temperature Climates

John Deere engines are designed to operate using glycol base engine coolants.

Always use a recommended glycol base engine coolant, even when operating in geographical areas where freeze protection is not required.

IMPORTANT: Water may be used as coolant *in emergency situations only.*

Foaming, hot surface aluminum and iron corrosion, scaling, and cavitation will occur when water is used as the coolant, even when coolant conditioners are added.

Drain cooling system and refill with recommended glycol base engine coolant as soon as possible.

DX,COOL6 –19–18MAR96–1/1

Additional Information About Diesel Engine Coolants and Supplemental Coolant Additives

Engine coolants are a combination of three chemical components: ethylene glycol or propylene glycol antifreeze, inhibiting coolant additives, and quality water.

Coolant specifications

Some products, including John Deere COOL-GARD™ Prediluted Coolant, are fully formulated coolants that contain all three components in their correct concentrations. Do not add an initial charge of supplemental coolant additives to these fully formulated products.

Coolants meeting ASTM D6210 do not require an initial charge of supplemental coolant additives.

Some coolant concentrates, including John Deere COOL-GARD Coolant Concentrate, contain both glycol antifreeze and inhibiting coolant additives. Mix these products with quality water, but do not add an initial charge of supplemental coolant additives.

Coolants meeting ASTM D4985 require an initial charge of supplemental coolant additives.

Replenish coolant additives

The concentration of coolant additives is gradually depleted during engine operation. Periodic replenishment of inhibitors is required, even when John Deere COOL-GARD or another fully formulated coolant is used. Follow the recommendations in this manual for the use of supplemental coolant additives.

Why use supplemental coolant additives?

Operating without proper coolant additives will result in increased corrosion, cylinder liner erosion and pitting, and other damage to the engine and cooling system. A simple mixture of ethylene glycol or propylene glycol and water will not give adequate protection.

Use of supplemental coolant additives reduces corrosion, erosion, and pitting. These chemicals reduce the number of vapor bubbles in the coolant and help form a protective film on cylinder liner surfaces. This film acts as a barrier against the harmful effects of collapsing vapor bubbles.

Avoid automotive-type coolants

Never use automotive-type coolants (such as those meeting ASTM D3306). These coolants do not contain the correct additives to protect heavy-duty diesel engines. They often contain a high concentration of silicates and may damage the engine or cooling system.

Water quality

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate. All water used in the cooling system should meet the following minimum specifications for quality:

Chlorides	<40 mg/L
Sulfates	<100 mg/L
Total dissolved solids	<340 mg/L
Total hardness	<170 mg/L
pH	5.5 to 9.0

Freeze protection

The relative concentrations of glycol and water in the engine coolant determine its freeze protection limit.

COOL-GARD is a trademark of Deere & Company

Continued on next page

Ethylene Glycol	Freeze Protection Limit
40%	-24°C (-12°F)
50%	-37°C (-34°F)
60%	-52°C (-62°F)
Propylene Glycol	**Freeze Protection Limit**
40%	-21°C (-6°F)
50%	-33°C (-27°F)
60%	-49°C (-56°F)

DO NOT use a coolant-water mixture greater than 60% ethylene glycol or 60% propylene glycol.

DX,COOL7 –19–19DEC03–2/2

Testing Diesel Engine Coolant

Testing Diesel Engine Coolant

Maintaining adequate concentrations of glycol and inhibiting additives in the coolant is critical to protect the engine and cooling system against freezing, corrosion, and cylinder liner erosion and pitting.

Test the coolant solution at intervals of 12 months or less and whenever excessive coolant is lost through leaks or overheating.

Coolant test strips

Coolant test strips are available from your John Deere dealer. These test strips provide a simple, effective method to check the freeze point and additive levels of your engine coolant.

Compare the results to the supplemental coolant additive (SCA) chart to determine the amount of inhibiting additives in your coolant and whether more John Deere COOLANT CONDITIONER should be added.

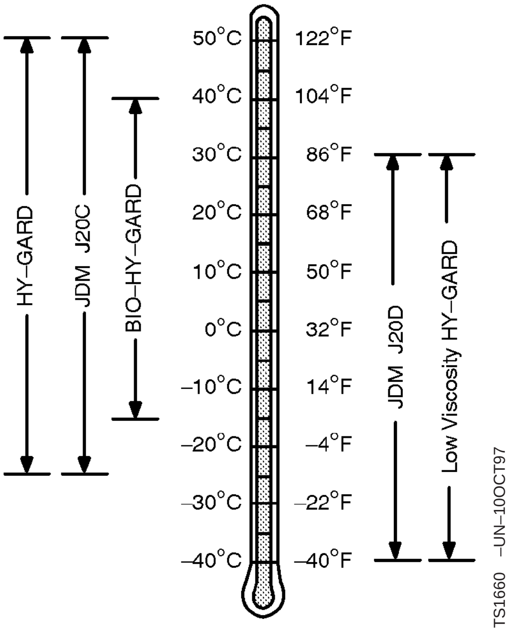
COOLSCAN™ and COOLSCAN PLUS™

For a more thorough evaluation of your coolant, perform a COOLSCAN or COOLSCAN PLUS analysis, where available. See your John Deere dealer for information.

COOLSCAN is a trademark of Deere & Company
COOLSCAN PLUS is a trademark of Deere & Company

DX,COOL9 –19–19DEC03–1/1

Transmission and Hydraulic Oil



Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

- John Deere HY-GARD™
- John Deere Low Viscosity HY-GARD™

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Use John Deere BIO-HY-GARD™ oil when a biodegradable fluid is required.[1]

HY-GARD is a trademark of Deere & Company
BIO-HY-GARD is a trademark of Deere & Company

---

[1] *BIO-HY-GARD meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. BIO-HY-GARD should not be mixed with mineral oils, because this reduces the biodegradability and makes proper oil recycling impossible.*

DX,ANTI –19–07NOV03–1/1

Use Correct Transmission/Hydraulic Filter Element

To protect systems, replace transmission-hydraulic oil filter with a John Deere service filter element.

See Maintenance and Service Intervals section for recommended filter change intervals.

OUMX005,00019A8 –19–19AUG04–1/1

MFWD Axle Housing and Wheel Hub Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

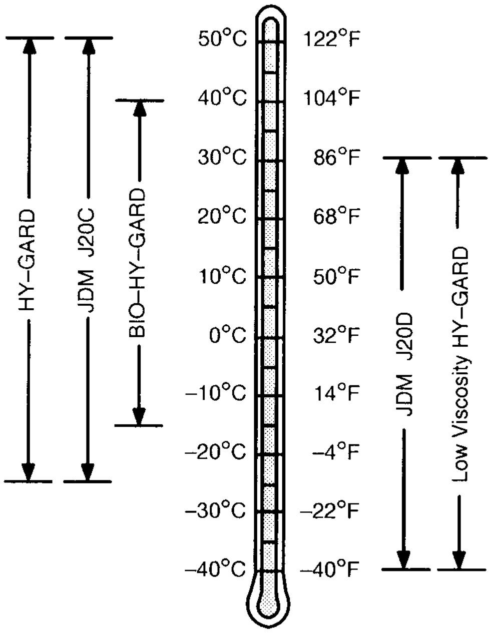
The following oils are preferred:

- John Deere HY-GARD®
- John Deere Low Viscosity HY-GARD®

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Use John Deere BIO-HY-GARD™ oil when a biodegradable fluid is required.[1]



TS1651 –UN–14MAR96

HY-GARD is a registered trademark of Deere & Company
BIO-HY-GARD is a trademark of Deere & Company

---

[1] *BIO-HY-GARD meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. BIO-HY-GARD should not be mixed with mineral oils, because this reduces the biodegradability and makes proper oil recycling impossible.*

RF30435,000002E –19–15JUL04–1/1

Grease

Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

John Deere SD POLYUREA GREASE is preferred.

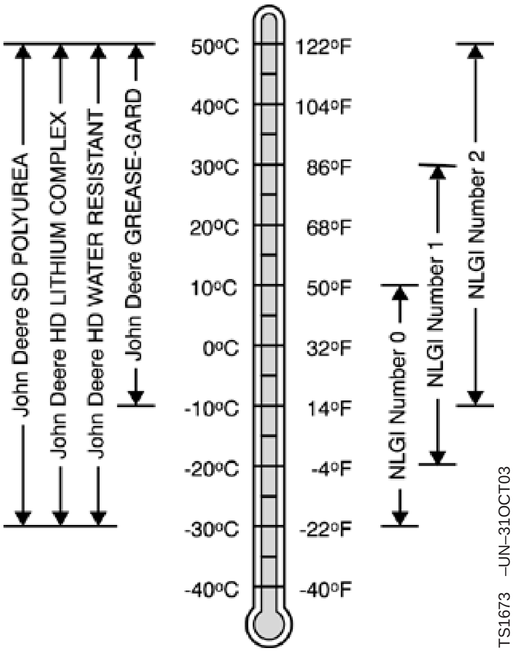
The following greases are also recommended

- John Deere HD LITHIUM COMPLEX GREASE
- John Deere HD WATER RESISTANT GREASE
- John Deere GREASE-GARD™

Other greases may be used if they meet the following:

NLGI Performance Classification GC-LB

IMPORTANT: Some types of grease thickeners are not compatible with others. Consult your grease supplier before mixing different types of grease



TS1673 –UN–31OCT03

GREASE-GARD is a trademark of Deere & Company

DX,GREA1 –19–07NOV03–1/1

Grease (Specific Application)

Lithium Grease with Molybdenum Disulphide is recommended for use on internal components of transmission.

TY6333 John Deere Moly High Temperature EP Grease is recommended for use on the traction clutch and PTO clutch splines.

JG31785,0000179 –19–11NOV04–1/1

Mixing of Lubricants

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives in their oils to meet certain specifications and performance requirements.

Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

Consult your John Deere dealer to obtain specific information and recommendations.

DX,LUBMIX –19–18MAR96–1/1

Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some John Deere brand coolants and lubricants may not be available in your location.

Consult your John Deere dealer to obtain information and recommendations.

Synthetic lubricants may be used if they meet the performance requirements as shown in this manual.

The temperature limits and service intervals shown in this manual apply to both conventional and synthetic oils.

Re-refined base stock products may be used if the finished lubricant meets the performance requirements.

DX,ALTER –19–15JUN00–1/1

Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST –19–18MAR96–1/1

Serial Number Locations

Serial Numbers

When working on machines or components that are covered by warranty, it is IMPORTANT that you include the machine's Product Identification Number and the component serial number on the warranty claim form.

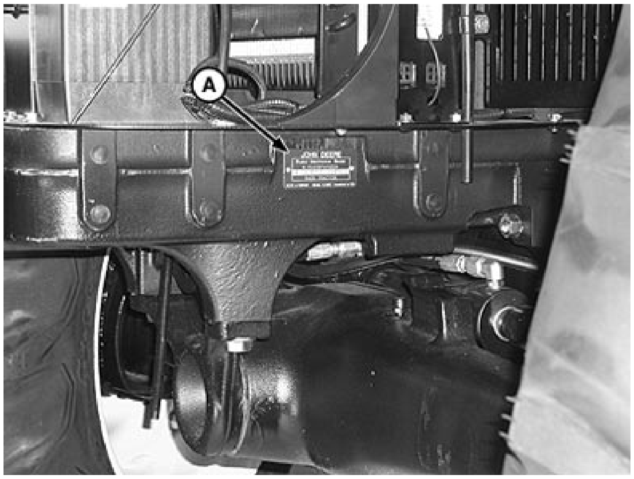
The location of component serial number plates are shown below.

JG31785,000001D –19–30AUG04–1/1

Product Identification Number Location

The machine's product identification number plate (A) is located on the left side of the front support.

A—Product Identification Number Plate



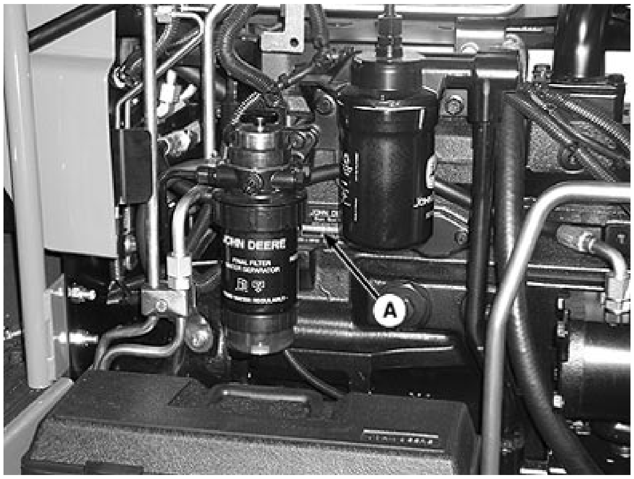
LV9944 –UN–12AUG04

JG31785,000001E –19–30AUG04–1/1

Engine Serial Number Location—4-Cylinder

The engine serial number plate (A) is located on the right side of the engine block, between the engine oil filter, and the final filter water separator.

A—Engine Serial Number Plate



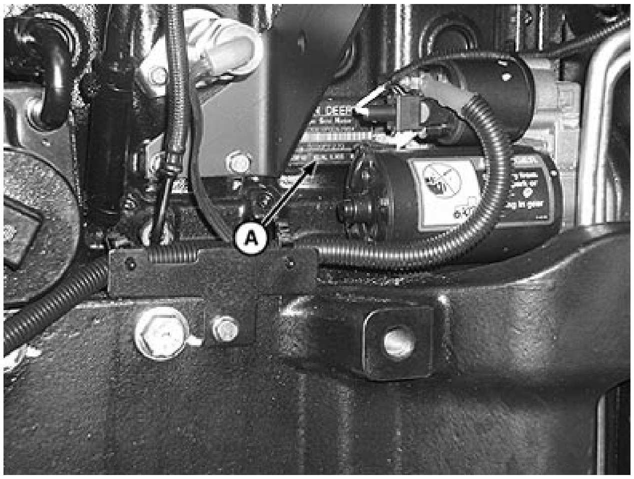
LV9945 –UN–12AUG04

JG31785,000001F –19–30AUG04–1/1

Engine Serial Number Location—5-Cylinder

The engine serial number plate (A) is located on the left side of the engine block, near the starter.

A—Engine Serial Number Plate



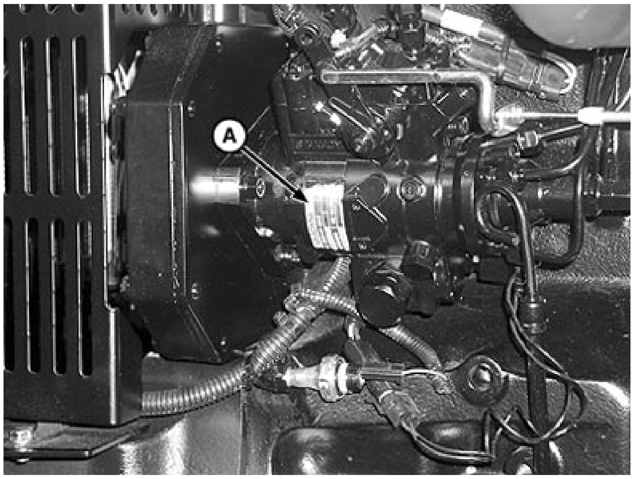
LV9946 –UN–12AUG04

JG31785,0000020 –19–30AUG04–1/1

Fuel Injection Pump Serial Number Location

On 4-cylinder engine the fuel injection pump serial number plate (A) is located on the side of the pump. 5-cylinder engines use an internal fuel injection pump.

A—Fuel Injection Pump Serial Number Plate



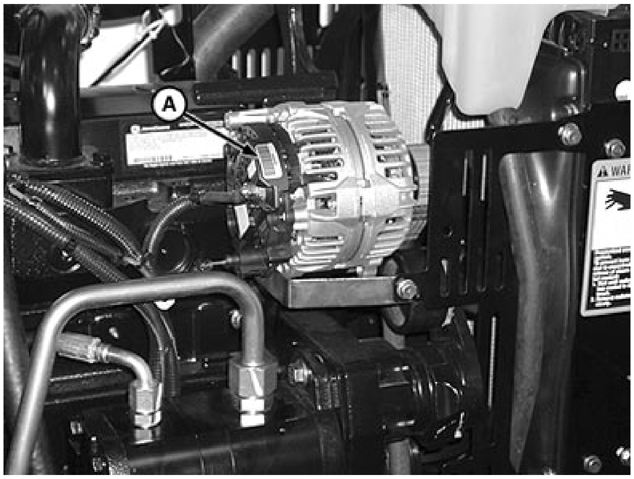
LV9947 –UN–12AUG04

JG31785,0000021 –19–30AUG04–1/1

Alternator Identification Number Location

The alternator identification number is located at the rear of the housing.

A—Alternator Identification Number



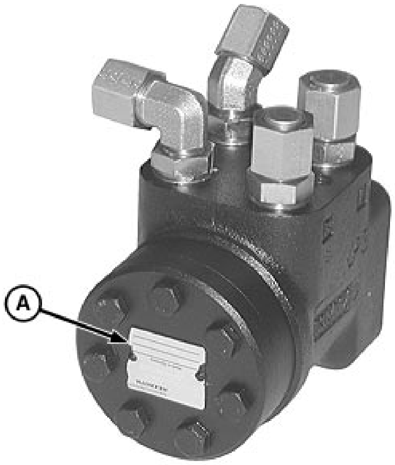
LV9950 –UN–12AUG04

JG31785,0000022 –19–30AUG04–1/1

Power Steering Valve Serial Number Location

The power steering valve serial number plate (A) is located on the bottom of the valve.

A—Power Steering Valve Serial Number Plate



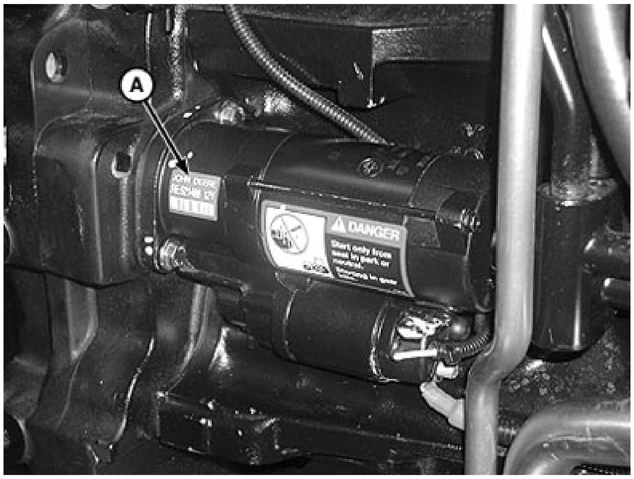
LV10259 –UN–09SEP04

JG31785,0000023 –19–30AUG04–1/1

Starter Serial Number Location—4-Cylinder

The starter serial number plate (A) is located on the side of the starter housing.

A—Starter Serial Number Plate



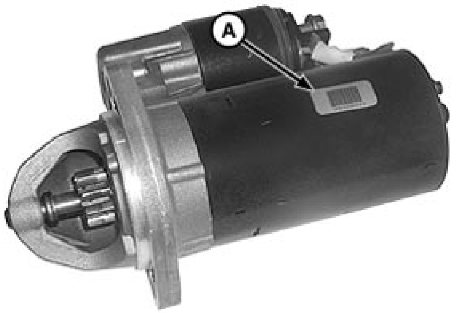
LV9951 –UN–12AUG04

JG31785,0000024 –19–30AUG04–1/1

Starter Serial Number Location—5-Cylinder

The starter serial number plate (A) is located on the back side of the starter housing, when mounted.

A—Starter Serial Number Plate



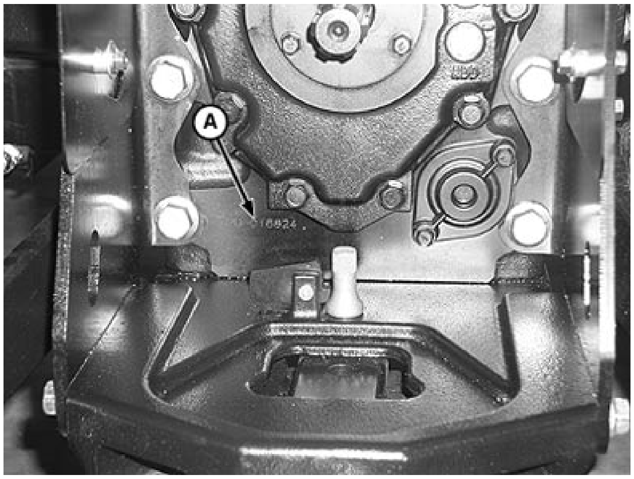
LV9952 –UN–12AUG04

JG31785,0000025 –19–30AUG04–1/1

Transmission Serial Number Location

The transmission (drive train) serial number (A) is located at the rear of the machine on the bottom left corner of the differential housing.

A—Transmission Serial Number



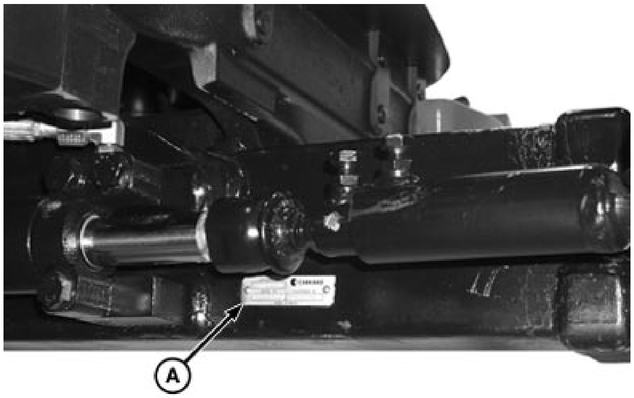
LV9953 –UN–12AUG04

JG31785,0000026 –19–30AUG04–1/1

Front Axle (2WD) Serial Number Location

The 2WD front axle serial number plate (A) is located on the rear right side of the axle.

A—2WD Front Axle Serial Number Plate



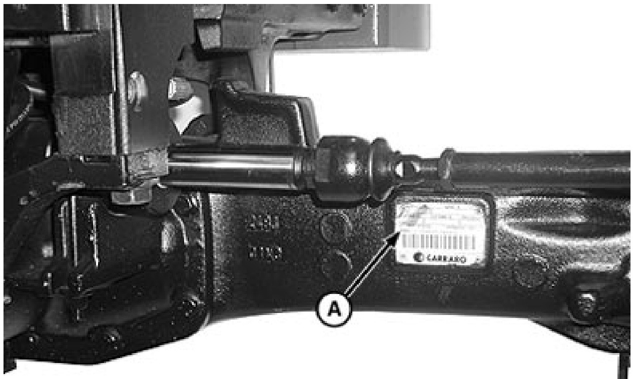
LV10635 –UN–27SEP04

JG31785,0000027 –19–30AUG04–1/1

Mechanical Front Wheel Drive (MFWD) Serial Number Location

The MFWD serial number plate (A) is located on the rear right side of the axle housing.

A—MFWD Serial Number Plate



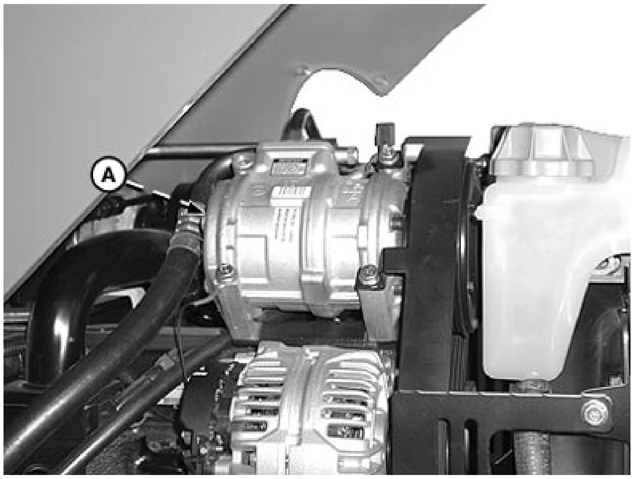
LV9948 –UN–12AUG04

JG31785,0000028 –19–30AUG04–1/1

Air Conditioning Compressor Serial Number Location

The air conditioning compressor serial number plate (A) is located on the rear of the housing.

A—Air Conditioning Compressor Serial Number Plate

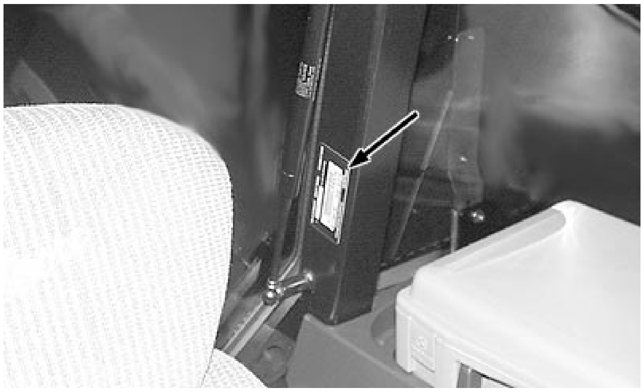


LV9949 –UN–12AUG04

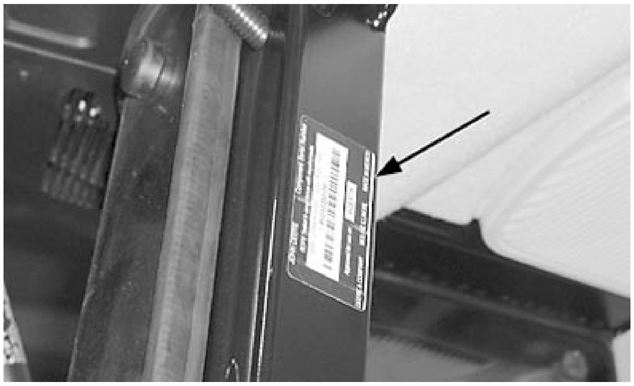
JG31785,0000029 –19–30AUG04–1/1

Cab Serial Number Location

The cab serial number plate is located on the inside of rear left-hand cab post.


LV09185 –UN–19JUL04

5225, 5325, 5425, 5525 and 5625 Cab


LV12842 –UN–01NOV06

5603 Cab

OUO1023,0002A27 –19–02NOV06–1/1

Features and Accessories

The information covered in this group pertains to the features of the machines covered in this Technical Manual. It can be used in addition to the normal advertising literature or may help in determining which specific feature requires service. A list of all the available accessories and kits is also included.

JG31785,000013B –19–01NOV04–1/1

Standard Features—Straddle Mount and Isolated Open Operator Station Tractors

LV09156 –UN–12NOV04

Straddle Mount Tractor

LV09177 –UN–12NOV04

Isolated Open Operator Station

- John Deere 250 Series Engine
  - 5225 3.0 L 42 kw (56 hp)
  - 5325 3.0 L 50 kw (67 hp)
  - Turbocharged 5-cylinder diesel engine
  - Direct injection
  - Key switch controlled fuel shut-off
- John Deere 350 Series Engine
  - 5425 4.5 L 60 kw (81 hp)
  - 5525 4.5 L 68 kw (91 hp)
  - Turbocharged 4-cylinder diesel engine
  - Wet sleeved
  - Direct injection
  - Key switch controlled fuel shut-off
- SYNCSHUTTLE™ Transmission
  - Nine speeds forward, three reverse
  - Inboard planetary final drives
  - Differential lock
- Heavy-Duty 2WD Front Axle
- Three Point Hitch
  - Category I and II interchangeable
  - Position and draft control levers
- Dual Clutch
  - Provides independent PTO
  - Stops tractor without disengaging PTO
- Two-Post Foldable ROPS with Seat Belt
  - Protects operator in the event of a tip-over
- PTO
  - Rear, 540 rpm
  - Fully independent clutch
- PTO Warning System
  - Warning horn sounds when operator leaves seat with PTO engaged. Engine and PTO continue to run
- Hydrostatic Power Steering
  - Power is supplied by a tandem gear hydraulic pump mounted to the engine
- Hydraulic Brakes
  - Wet disc
  - Individually hydraulic controlled
  - Self-adjusting and self-equalizing
- Open-Center Hydraulic System
  - Tandem gear hydraulic pumps

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

– Pumps are driven directly off engine timing gears
The rear pump supplies oil to the power steering and brake valve and lubricates top shaft of the transmission.

The front pump supplies oil to the rockshaft and the selective control valves, if equipped.

JG31785,000013C –19–03NOV06–2/2

Standard Features—Cab Tractor

- John Deere 250 Series Engine
  - 5225 3.0 L 42 kw (56 hp)
  - 5325 3.0 L 50 kw (67 hp)
  - Turbocharged 5-cylinder diesel engine
  - Direct injection
  - Key switch controlled fuel shut-off
- John Deere 350 Series Engine
  - 5425 4.5 L 60 kw (81 hp)
  - 5525 4.5 L 68 kw (91 hp)
  - 5625 and 5603 4.5 L 74 kW (99 hp)
  - Turbocharged 4-cylinder diesel engine
  - Wet sleeved
  - Direct injection
  - Key switch controlled fuel shut-off
- Heavy-Duty 2WD Front Axle[1]
- MFWD Front Axle
- SYNCSHUTTLE™ Transmission
  - Nine speeds forward, three reverse
  - Inboard planetary final drives
  - Differential lock
- POWRREVERSER™ Transmission
  - 12 speeds forward, 12 reverse
  - Hydraulic forward to reverse shift
- Dual Clutch
  - Provides independent PTO
  - Stops tractor without disengaging PTO
- PTO
  - Rear, 540 rpm
  - Fully independent clutch
- Hydrostatic Power Steering
  - Tilt and telescoping steering wheel
  - Power is supplied by a tandem gear hydraulic pump mounted to the engine
- Hydraulic Brakes
  - Wet disc
  - Individually hydraulic controlled
  - Self-adjusting and self-equalizing
- Open-Center Hydraulic System
  - Tandem gear hydraulic pumps
  - Pumps are driven directly off engine timing gears

LV09222 –UN–23JUL04

5225—5625 Cab Tractor

LV12804 –UN–01NOV06

5603 Cab Tractor

SYNCSHUTTLE is a trademark of Deere & Company
POWRREVERSER is a trademark of Deere & Company

---

[1] *Not offered on model series 5625 or 5603.*

Continued on next page

The rear pump supplies oil to the power steering and brake valve and lubricates top shaft of the transmission.

The front pump supplies oil to the rockshaft and the selective control valves, if equipped.

JG31785,000013D –19–03NOV06–2/2

Standard Features—5525 Hi-Crop Straddle Mount Tractors

LV9486 –UN–29JUL04

5525 Hi-Crop Straddle Mount

- John Deere 350 Series Engine
  - 5525 4.5 L 68 kw (91 hp)
  - Turbocharged 4-cylinder diesel engine
  - Wet sleeved
  - Direct injection
  - Key switch controlled fuel shut-off
- SYNCSHUTTLE™ Transmission
  - Nine speeds forward, three reverse
  - Drop axle final drive gear case
  - Differential lock
- Mechanical front wheel drive (MFWD)
- Dual Clutch
  - Provides independent PTO
  - Stops tractor without disengaging PTO
- PTO
  - Rear, 540 rpm
  - Fully independent clutch
- Hydrostatic Power Steering
  - Power is supplied by a tandem gear hydraulic pump mounted to the engine
- Hydraulic Brakes
  - Wet disc
  - Individually hydraulic controlled
  - Self-adjusting and self-equalizing
- Open-Center Hydraulic System
  - Tandem gear hydraulic pumps
  - Pumps are driven directly off engine timing gears

The rear pump supplies oil to the power steering and brake valve and lubricates top shaft of the transmission.

The front pump supplies oil to the rockshaft and the selective control valves, if equipped.

SYNCSHUTTLE is a trademark of Deere & Company

JG31785,000013E –19–01NOV04–1/1

Factory Installed Optional Equipment

- Mechanical Front Wheel Drive (MFWD) Axle
  - Center line design
  - Limited slip differential
  - High pivot point for better ground clearance and axle oscillation
- POWRREVERSER™ Transmission
  - 12 speeds forward, 12 reverse
  - Hydraulic forward to reverse shift
- POWRREVERSER™ Transmission with Electro-Hydraulic Hi/Lo[1]
  - 24 speeds forward, 24 reverse
  - Hydraulic forward to reverse shift
- Shiftable 540/540E PTO
- Electro-Hydraulic PTO[1]
- Electro-Hydraulic Hitch[1]
- Electro-Hydraulic MFWD[1]
- Mid-Mount Control Valve
  - One lever “joystick” control
- Single selective control valve
- Dual selective control valve
- Triple selective control valve[1]
  - Lever operation for each valve
- Cold Weather Package (4-Cylinder Engines)
  - Engine coolant heater
  - Heavy duty air intake heater
- Front drive coupler
- Side exhaust
- Power coupler kit
- Telescoping draft links

LV11482 –UN–03NOV04

LV11481 –UN–03NOV04

POWRREVERSER is a trademark of Deere & Company

[1] *Not offered on model series 5603*

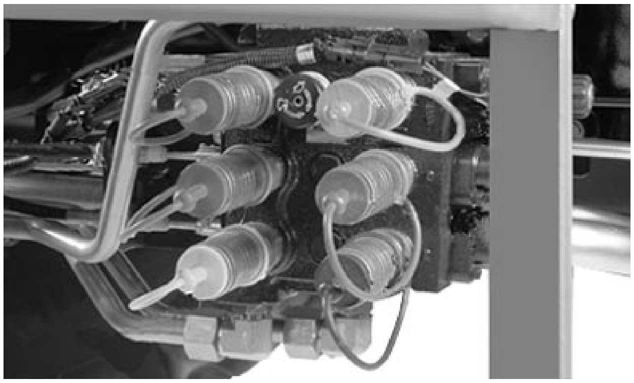
JG31785,0000140 –19–03NOV06–1/1

Field Installed Optional Kits and Accessories

- 540/1000 PTO
- Mid-Mount control valve
  - One lever “joystick” control
- Dual selective control valve
- Triple selective control valve[1]
  - lever operation for each valve
- Creeper gear kit
- EH fender switch (rockshaft)[1]
- Single horn
- Front weight support and weights
- Standard canopy[2]
- Deluxe canopy[2]
- Work lights for tractors without fender mounted lights
- Larger tool box
- Available for factory installed cab
  - Right exterior mirror
  - Rear wiper and windshield washer
  - AM and FM radio with speakers and antenna
  - Rotating beacon light
  - Field office kit
- Cold weather package (4-cylinder engines only)
  - Engine coolant heater
  - Heavy duty air intake heater
- Heavy duty alternator
- Side exhaust
- Oil cooler
- Auxiliary driving lights
- Front fender options
- Front wheel spacers
- Locking fuel cap
- Rear axle extension
- Rear wheel weights
- Seat arm rests
- Power coupler kit
- Interchangeable hitch ball
- Centerlink conversion
- Draft link conversion
- Heavy duty drawbar
- Drawbar offset

LV11479 –UN–04NOV04

Front Weight Support and Weights


LV11480 –UN–03NOV04

Mid-Mount Control Valve

---

[1] *Not offered on model series 5603*

[2] *Straddle Mount and IOOS tractors only*

Continued on next page

- Telescoping draft links
- Rear axle spacers
- Front work lights
- Backrest extension
- Cab instructional seat
- Console power strip
- Rear fender extensions
- Seat lumbar adjustment
- EH hitch right fender switch[1]
- Ground speed indicator
- Infinitely variable shuttle
- Backup alarm
- Brake lights

---

[1] *Not offered on model series 5603*

JG31785,0000141 –19–03NOV06–2/2

Section 20
Engine Repair

Contents

Page

Group 05—Engine

Service Equipment and Tools 20-05-1
Specifications 20-05-2
John Deere Engine Repair—Use CTM104 or CTM301. 20-05-2
Remove Engine. 20-05-3
Install Engine 20-05-16

Group 10—Cooling System

Specifications 20-10-1
Engine Coolant Pump Repair—Use CTM104 or CTM301 20-10-1
Remove and Install Coolant Recovery Tank . . .20-10-1
Remove and Inspect Radiator 20-10-4
Install Radiator 20-10-7
Remove and Install Thermostat—4-Cylinder Engine .20-10-10
Remove and Install Thermostat—5-Cylinder Engine .20-10-12
Inspect and Replace Belt Tensioner—4-Cylinder Engine .20-10-13
Inspect and Replace Belt Tensioner—5-Cylinder Engine .20-10-15

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,000031B –19–04NOV04–1/5

Lifting Bracket JDG19

Used to remove and install engine.

OUO1082,000031B –19–04NOV04–2/5

Lifting Bracket JT01748

Used to remove and install engine.

OUO1082,000031B –19–04NOV04–3/5

Flywheel Turning Tool JDE83

Rotates flywheel (4-Cylinder)

OUO1082,000031B –19–04NOV04–4/5

Flywheel Turning Tool JDG1704

Rotates flywheel (5-Cylinder)

OUO1082,000031B –19–04NOV04–5/5

Specifications

Item	Measurement	Specification
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (4-Cylinder)	Torque	260 N•m (192 lb-ft)
Clutch Housing-to-Engine M20 Cap Screw (4-Cylinder)	Torque	430 N•m (317 lb-ft)
Clutch Housing-to-Side Frame Cap Screw (5-Cylinder)	Torque	430 N•m (317 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (5-Cylinder)	Torque	260 N•m (192 lb-ft)
Side Frame-to-Engine Cap Screw (5-Cylinder)	Torque	340 N•m (251 lb-ft)
Front Support-to-Side Frame Cap Screw (5-Cylinder)	Torque	430 N•m (317 lb-ft)
Engine-to-Front Support Top Cap Screw (4-Cylinder)	Torque	318 N•m (235 lb-ft)
Engine-to-Front Support Lower Cap Screw (4-Cylinder)	Torque	162 N•m (119 lb-ft)
Engine-to-Front Support Nut (4-Cylinder)	Torque	318 N•m (235 lb-ft)

OUO1082,000031F –19–05NOV04–1/1

John Deere Engine Repair—Use CTM104 or CTM301

For complete repair information the component technical manual (CTM) is also required. Use the component technical manual in conjunction with this machine manual.

- 5-cylinder 3.0 L engines—Use CTM301
- 4-cylinder 4.5 L engines—Use CTM104

COMPONENT
TECHNICAL
MANUAL

TS225 –UN–17JAN89

OUO1082,0000314 –19–03NOV04–1/1

Remove Engine

1. Tractors Equipped With Cab: Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

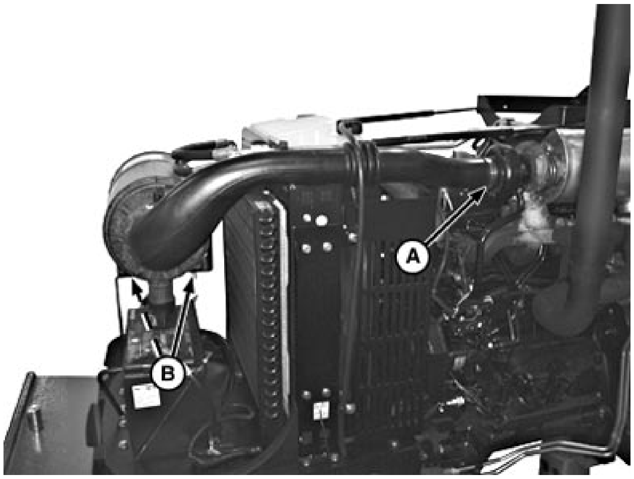
2. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)

3. Loosen clamp (A). Remove wing bolts (B) and engine air cleaner assembly.

4. Remove battery. (See Remove and Install Battery in Section 40, Group 05.)

NOTE: Cab tractors equipped with air conditioning: The hydraulic oil cooler is combined with the air conditioning condenser as one unit. The air conditioning unit must be properly disconnected. (See Remove, Inspect and Install Air Conditioning Condenser in Section 90, Group 20.)

5. Remove hydraulic oil cooler. (See Remove, Inspect and Install Hydraulic Oil Cooler in Section 70, Group 06.)

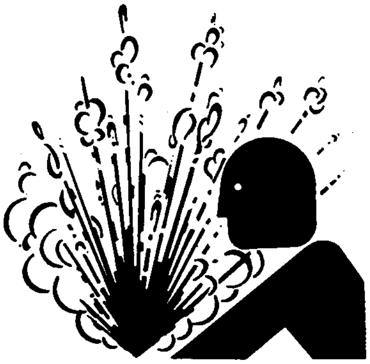


LV11394 –UN–27OCT04

A—Clamp
B—Wing Bolts

OUO1082,0000315 –19–03NOV04–1/18

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns. Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



TS281 –UN–23AUG88

6. Remove radiator. (See Remove and Inspect Radiator in Section 50, Group 10.)

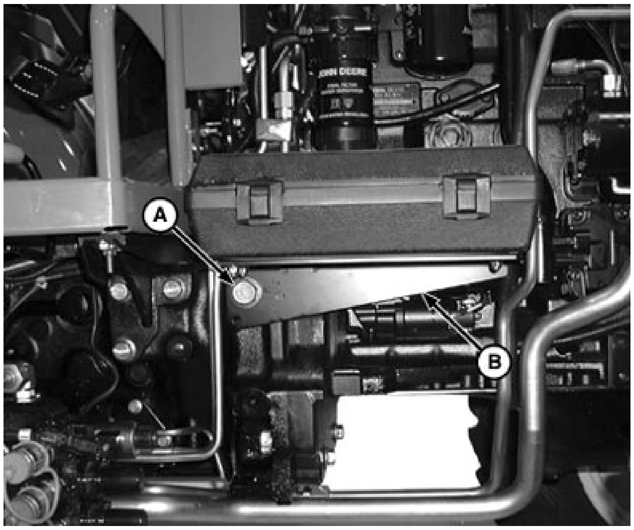
7. Remove MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

Continued on next page

OUO1082,0000315 –19–03NOV04–2/18

8. Remove cap screw (A) and toolbox (B), if equipped.

A—Cap Screw
B—Optional Toolbox



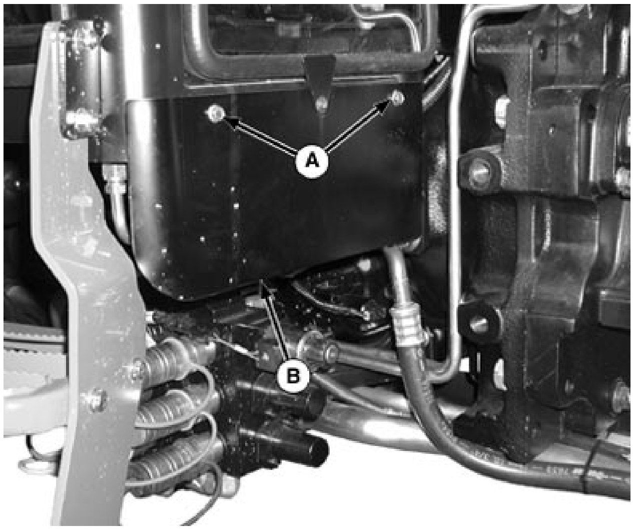
OUO1082,0000315 –19–03NOV04–3/18

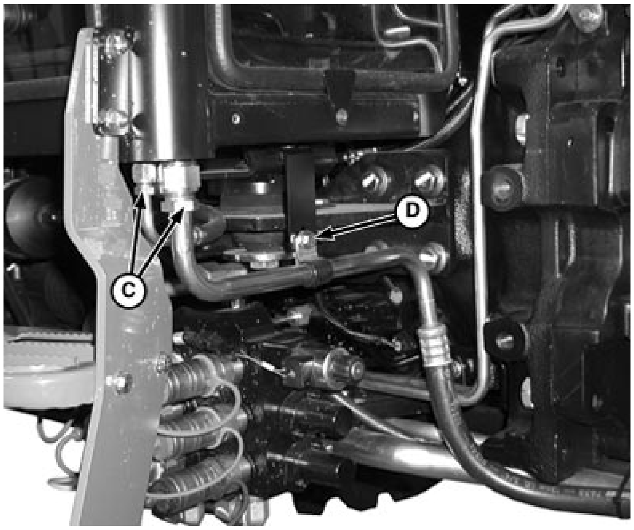
9. Tractors Equipped With Cab: Remove cap screws (A) and right-hand side crop guard (B).

NOTE: Close all openings using caps and plugs.

10. Tractors Equipped With Cab: Disconnect air conditioning lines (C) and remove clamp (D). Move A/C lines away from tractor body toward engine. Close all openings using caps and plugs.

A—Cap Screw (2 used)
B—Right-Hand Side Crop Guard
C—Air Conditioning Line (2 used)
D—Clamp





Continued on next page

OUO1082,0000315 –19–03NOV04–4/18

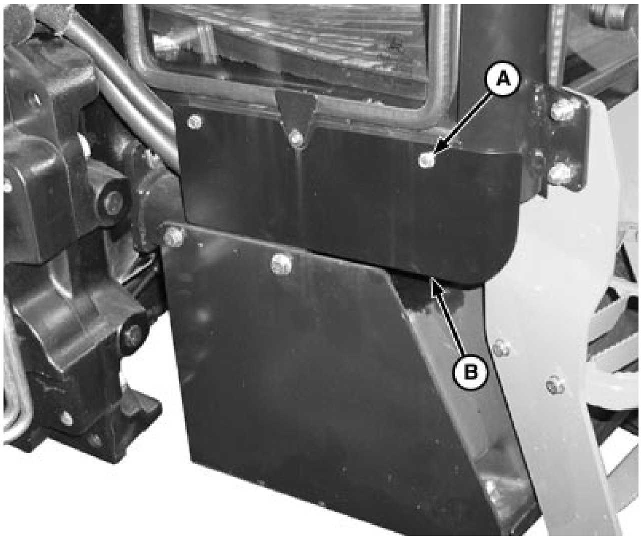
11. Tractors Equipped With Cab: Remove cap screws (A) and left-hand side crop guard (B).

NOTE: Close all openings using caps and plugs to prevent contamination.

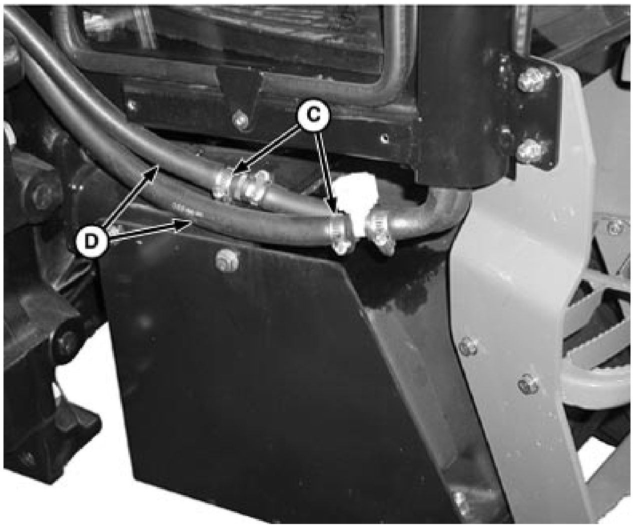
NOTE: Tag or label heater hoses before disconnecting to aid during installation.

12. Tractors Equipped With Cab: Loosen hose clamps (C) and disconnect heater hoses (D).

A—Cap Screw (2 used)
B—Left-Hand Side Crop Guard
C—Hose Clamp (2 used)
D—Heater Hoses



LV10905 –UN–13OCT04



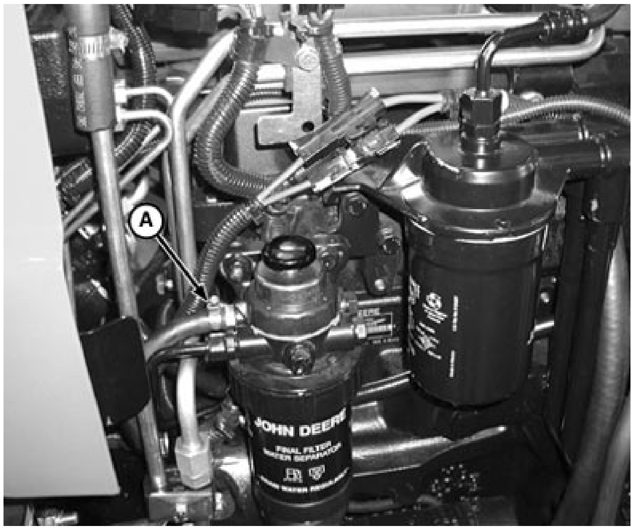
LV10906 –UN–06OCT04

Continued on next page

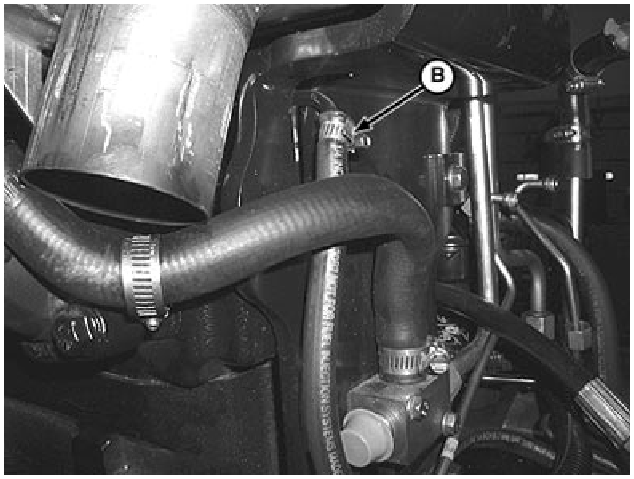
NOTE: Close all openings using caps and plugs to prevent contamination.

13. Disconnect fuel supply and return hoses (A and B). Close all openings using caps and plugs.

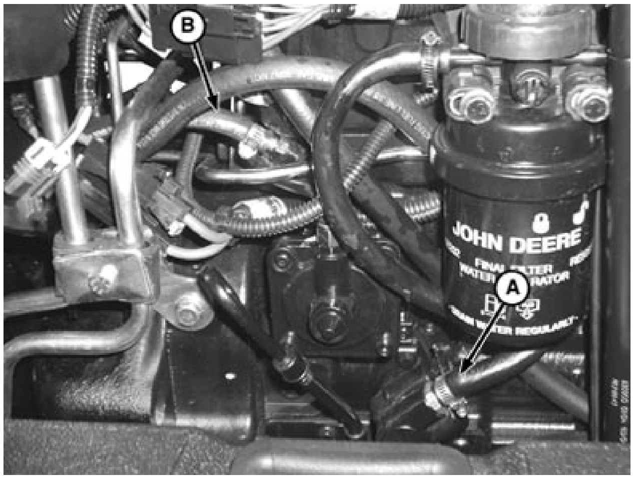
A—Fuel Supply Hose
B—Fuel Return Hose


A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV10899 –UN–06OCT04

4-Cylinder Supply Hose


B
LV11307 –UN–20OCT04

4-Cylinder Return Hose


B
A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV11306 –UN–20OCT04

5-Cylinder Hoses

Continued on next page

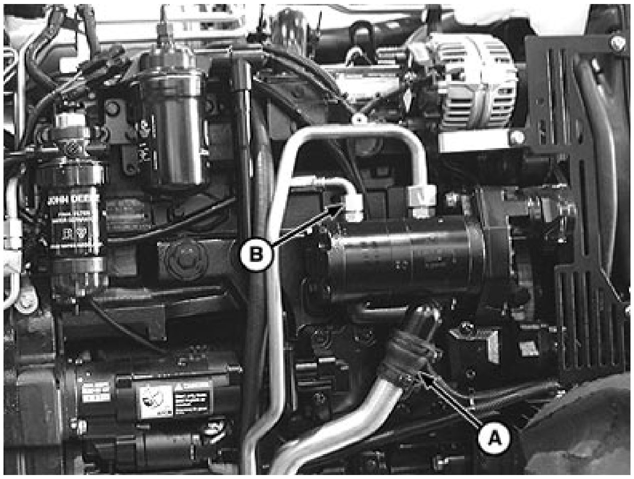
NOTE: Support hydraulic pump suction line (A). Transmission/hydraulic oil will spill out of transmission filter assembly if line drops below transmission/reservoir oil level.

14. Disconnect hydraulic pump suction line (A) from pump. Close all openings using caps and plugs.

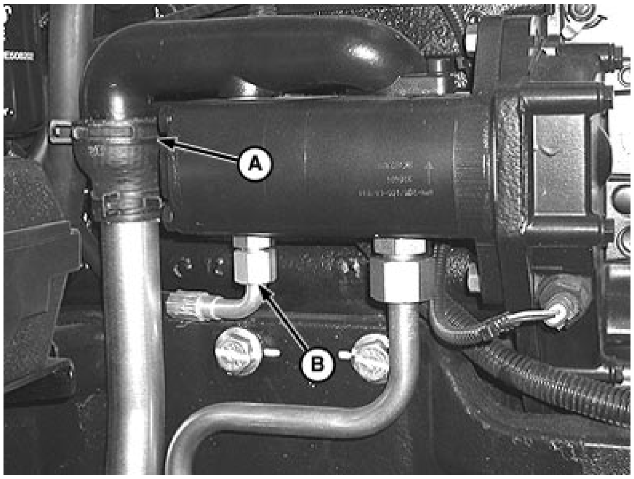
15. Disconnect hydraulic steering supply line (B). Close all openings using caps and plugs.

16. Disconnect main hydraulic supply line (C).

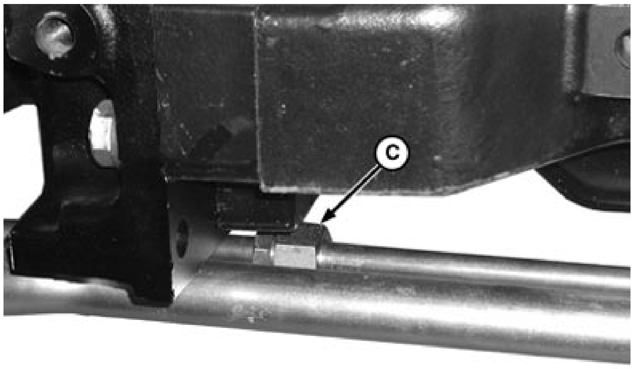
A—Hydraulic Pump Suction Line
B—Hydraulic Steering Supply Line
C—Main Hydraulic Supply Line



4-Cylinder



5-Cylinder

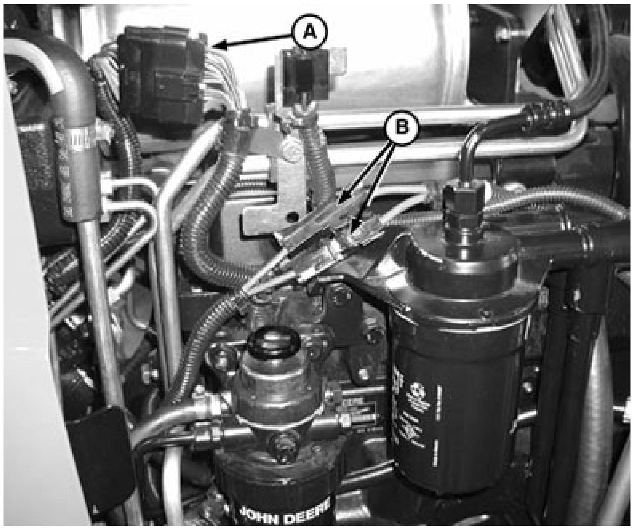


Continued on next page OUO1082,0000315 –19–03NOV04–7/18

NOTE: Cut all tie straps as needed.

17. Disconnect wiring harness connectors (A and B).

A—Main Wiring Harness Connector
B—Wiring Harness Connectors (2 used)

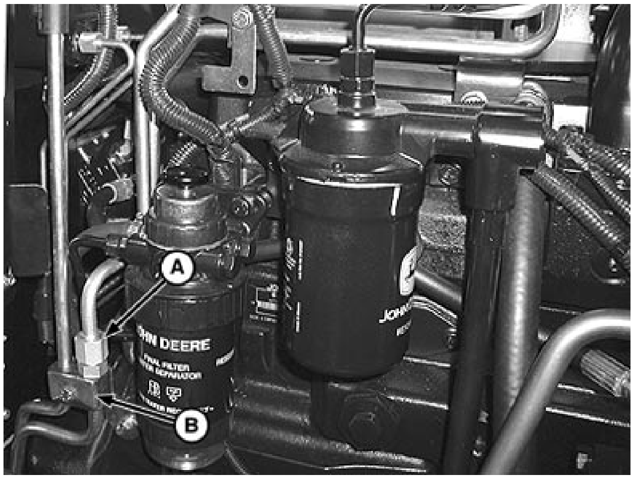


LV10901 –UN–06OCT04

OUO1082,0000315 –19–03NOV04–8/18

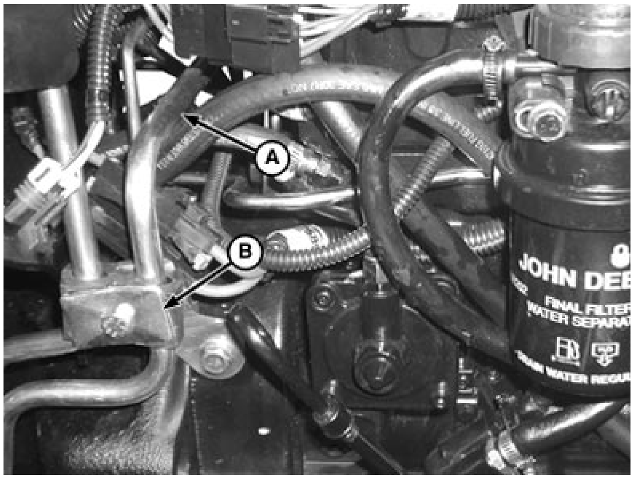
18. Disconnect steering return line (A) and remove line clamp (B).

A—Steering Return Line
B—Line Clamp


A
B
JOHN DEERE
FINAL FILTER
WATER SEPARATOR

LV11418 –UN–28OCT04

Return Line With Hydraulic Oil Cooler


A
B
JOHN DE
FINAL FILTER
WATER SEPARA

LV11419 –UN–28OCT04

Return Line Without Hydraulic Oil Cooler

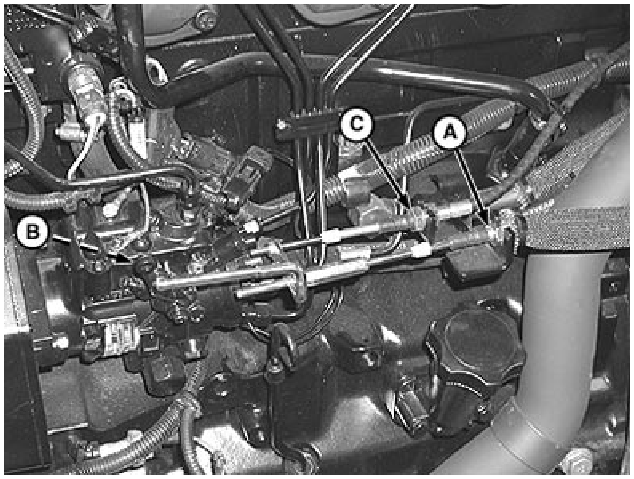
Continued on next page

OUO1082,0000315 –19–03NOV04–9/18

19. Loosen nut (C), remove cotter pin (B) and route throttle linkage away from engine.

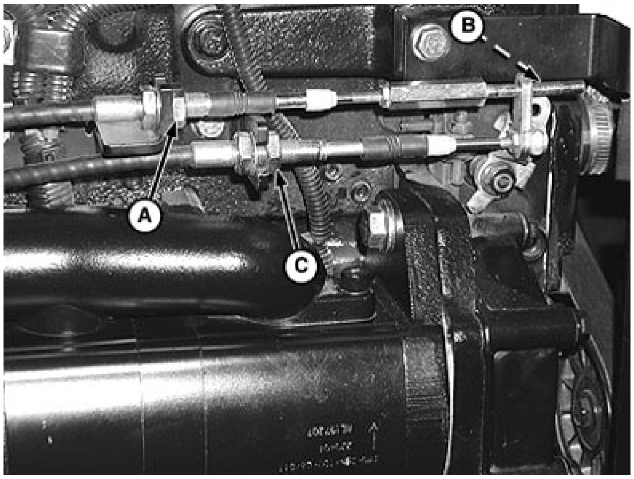
    If equipped: Loosen nut (A), and route 540/540E cable away from engine.

A—Nut—540/540E Cable
B—Cotter Pin
C—Nut—Throttle Cable



LV11356 –UN–20OCT04

4-Cylinder



LV11357 –UN–20OCT04

5-Cylinder

Continued on next page

OUO1082,0000315 –19–03NOV04–10/18

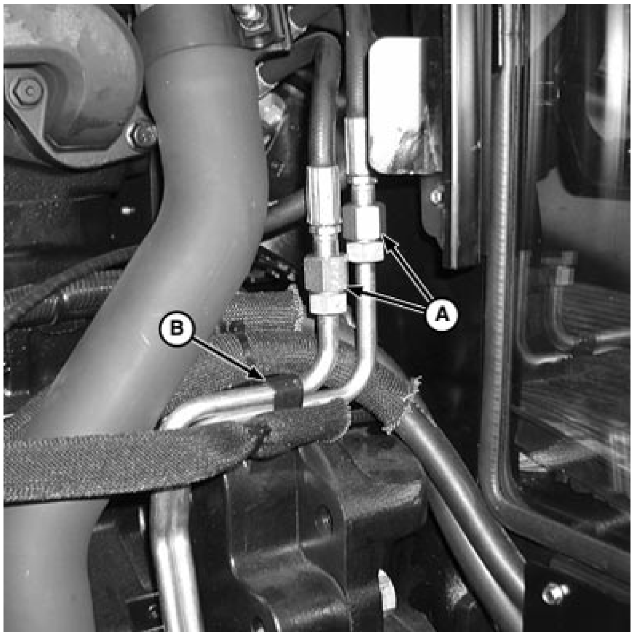
NOTE: Close all openings using caps and plugs.

Tag or label steering lines before disconnecting to aid during installation.

20. Remove two steering lines (A).

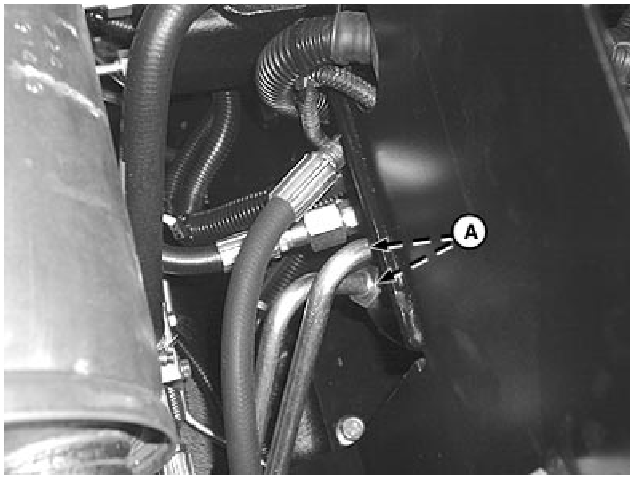
21. Remove line clamp (B).

A—Steering Lines (2 used)
B—Line Clamp



LV10904 –UN–06OCT04

IOOS and Cab Tractors



LV11383 –UN–22OCT04

Straddle Mount Tractors

Continued on next page OUO1082,0000315 –19–03NOV04–11/18

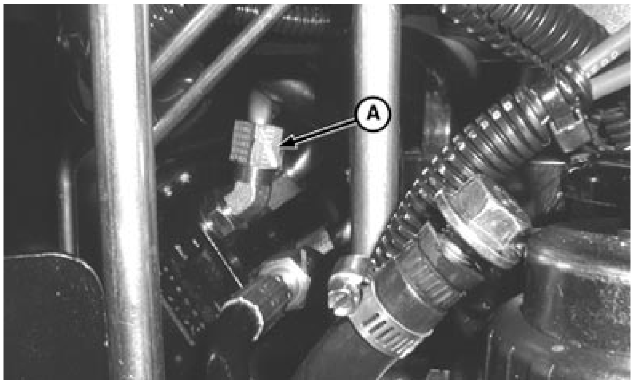
NOTE: Tag or label steering lines before disconnecting to aid during installation.

22. Remove steering hose (A) from steering valve. Close all openings using caps and plugs.

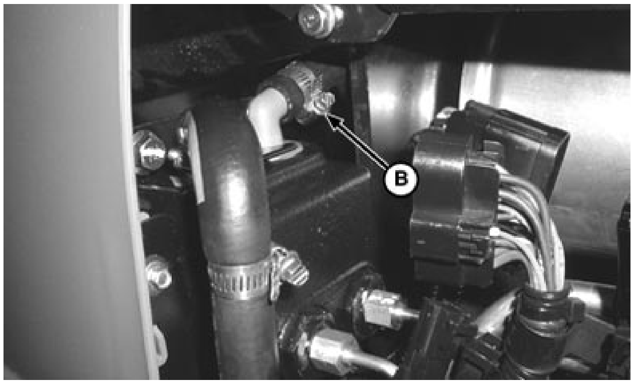
23. Remove hydraulic hose (B) from brake valve. Close all openings using caps and plugs.

24. Disconnect two steering lines (C). Close all openings using caps and plugs.

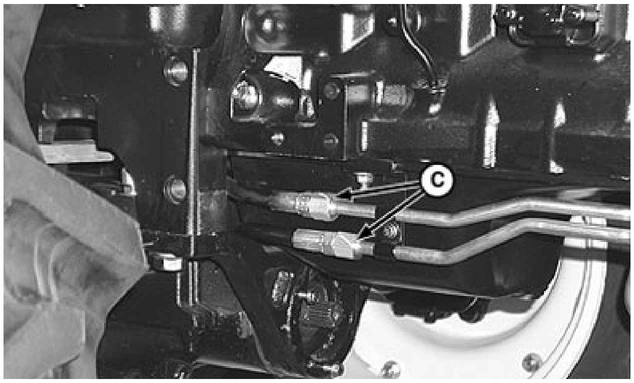
A—Steering Hose
B—Hydraulic Hose
C—Steering Lines (2 used)



LV10903 –UN–07OCT04



LV10933 –UN–07OCT04

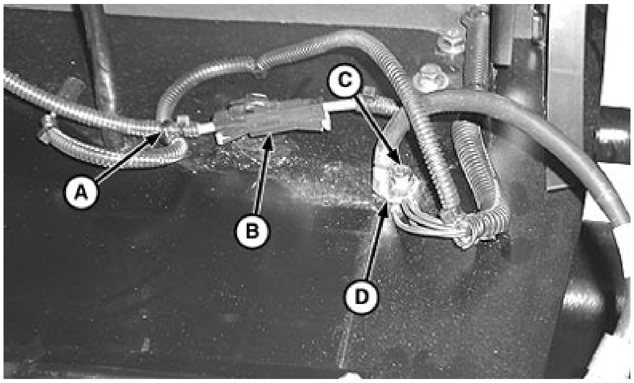


LV11265 –UN–20OCT04

OUO1082,0000315 –19–03NOV04–12/18

25. At front of tractor, cut tie straps (A) as needed. Disconnect connector (B), remove cap screw (C) and pull wiring harnesses (D) back to engine.

A—Tie Straps
B—Connector
C—Cap Screw
D—Wiring Harness (2 used)



LV11269 –UN–20OCT04

Continued on next page

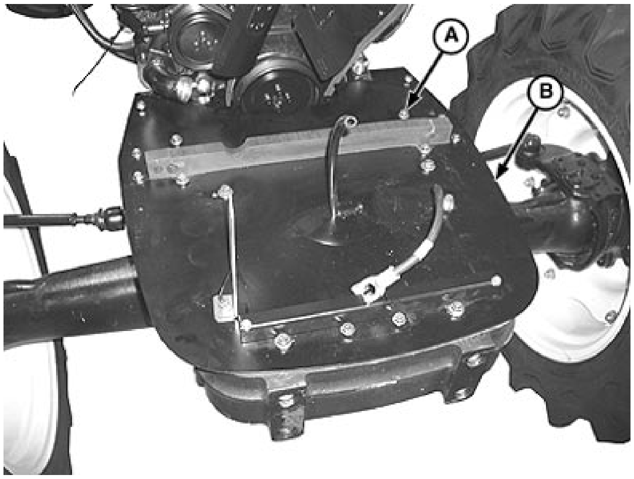
OUO1082,0000315 –19–03NOV04–13/18

CAUTION: Make sure front weights and front weight support are removed from tractor, if equipped, before removing any frame-to-engine mounting hardware.

26. Remove front weights and support, if equipped.

27. Remove cap screws (A) and plate (B).

28. Remove front axle assembly. (See Remove and Install Front Axle—2WD in Section 80, Group 05 or Remove and Install MFWD Axle Housing Assembly in Section 50, Group 35.)



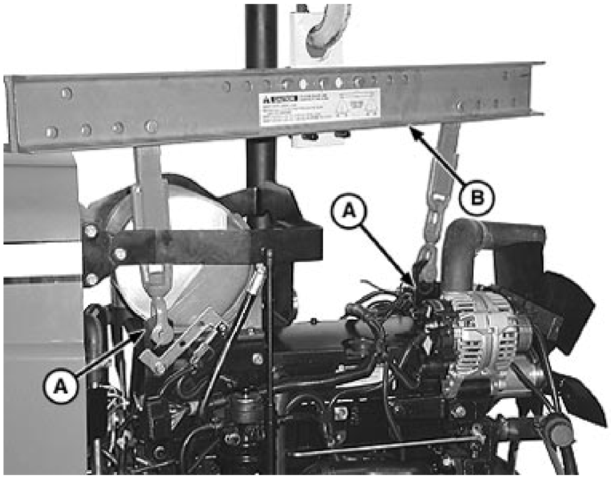
A—Cap Screw (6 used)
B—Plate

OUO1082,0000315 –19–03NOV04–14/18

29. Install lift brackets (A) such as JDG19 or JT01748 Lifting Brackets.

30. Attach engine lift sling (B) and hoist to engine.

A—Engine Lift Bracket (2 used)
B—Engine Lift Sling



Continued on next page

OUO1082,0000315 –19–03NOV04–15/18

31. Attach hoist to front frame.

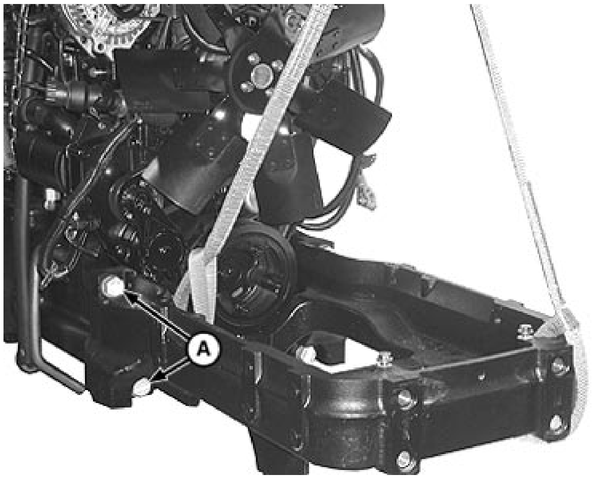
CAUTION: Front support assembly is heavy. Support assembly before removing cap screws to prevent personal injury.

32. 5-Cylinder Engines: Remove two cap screws (A) from each side of front support.

33. 4-Cylinder Engines: Remove cap screw (A), cap screw (B) and nut (C) from each side of front support.

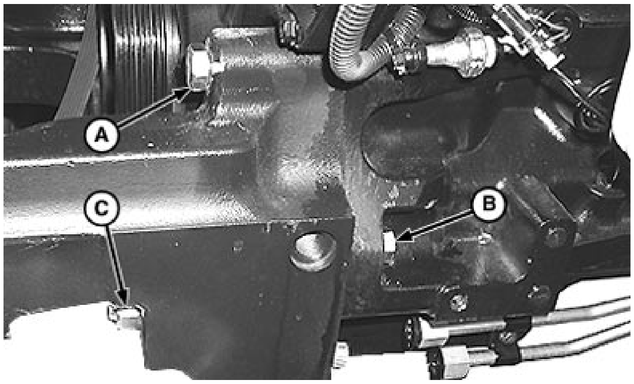
34. Remove front support.

A—Cap Screw
B—Cap Screw
C—Nut



LV11385 –UN–27OCT04

5-Cylinder Engine



LV11268 –UN–03NOV04

4-Cylinder Engine

Continued on next page

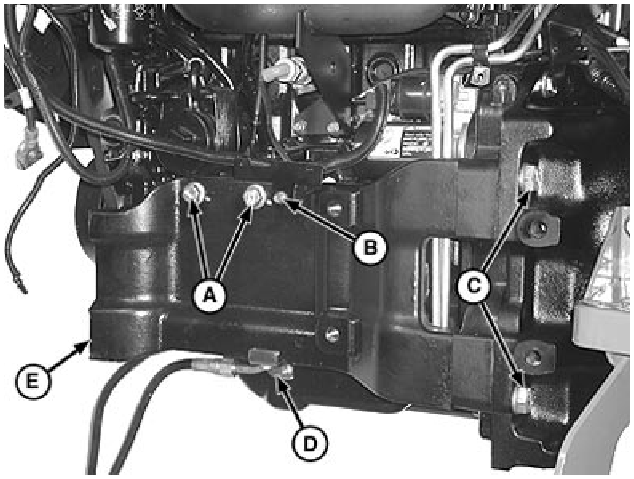
OUO1082,0000315 –19–03NOV04–16/18

CAUTION: Side frame is heavy. Support frame before removing cap screws to prevent personal injury.

35. 5-Cylinder engines: Remove harness bracket (B) and line bracket (D) on left side frame.

36. 5-Cylinder Engines: Remove two cap screws (A) from each side frame.

37. 5-Cylinder Engines: Remove two cap screws (C) from each side frame and remove side frames.



LV11386 –UN–27OCT04

A—Cap Screw
B—Harness Bracket
C—Cap Screw
D—Line Bracket
E—Side Frame

Continued on next page OUO1082,0000315 –19–03NOV04–17/18

IMPORTANT: Make sure tractor is level before removing engine to prevent damage to PTO shaft.

38. 5-Cylinder Engines: Remove two cap screws (A) on both sides of engine.

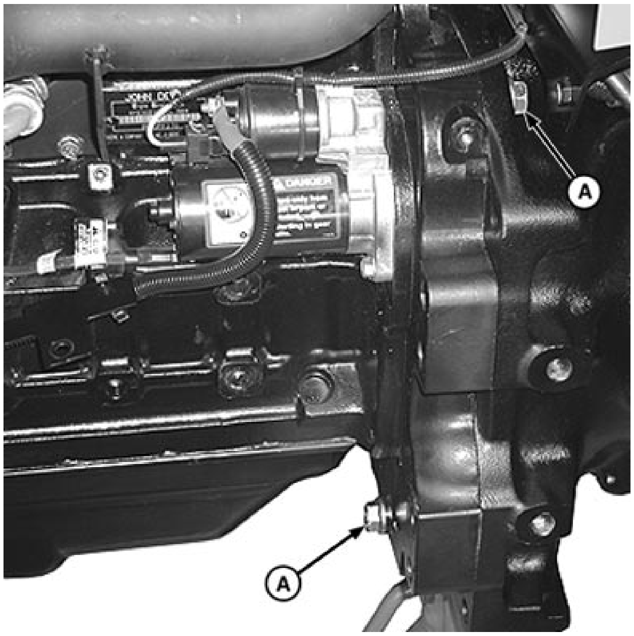
39. 4-Cylinder Engines: Remove two cap screws (A) and two cap screws (B) on both sides of engine.

40. Remove engine.

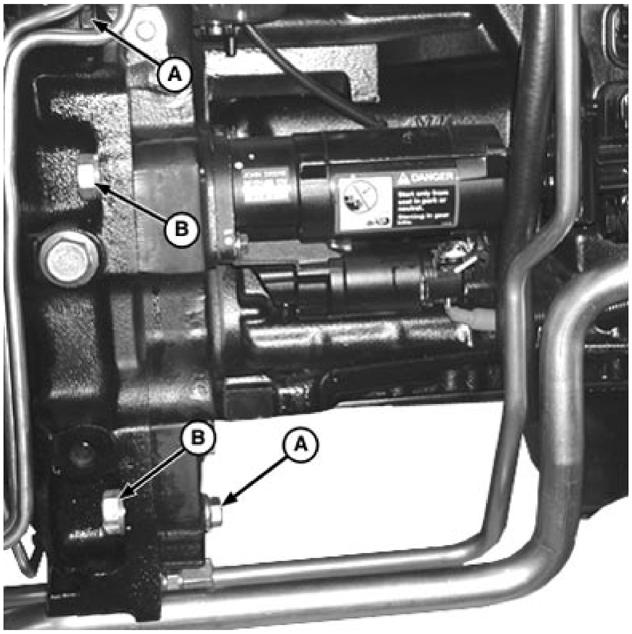
41. Remove clutch. (See Remove and Install Clutch Assembly in Section 50, Group 10 for SYNCSHUTTLE transmissions, or Remove and Install Clutch Assembly in Section 50, Group 11 for POWRREVERSER transmissions.)

42. Make repairs as necessary. (See CTM104 or CTM301.)

A—Cap Screw
B—Cap Screw



5-Cylinder Engine



4-Cylinder Engine

OUO1082,0000315 –19–03NOV04–18/18

Install Engine

IMPORTANT: Make sure tractor is level before installing engine to prevent damage to PTO shaft.

1. Install clutch. (See Remove and Install Clutch Assembly in Section 50, Group 10 for SYNCSHUTTLE transmissions, or Remove and Install Clutch Assembly in Section 50, Group 11 for POWRREVERSER transmissions.)

2. Put transmission shift levers in neutral to ease clutch shaft alignment with engine.

3. Apply multipurpose grease to end of PTO clutch shaft.

4. Use flywheel turning tool JDE83 (4-cylinder) or JDG1704 (5-cylinder) to help align traction clutch and shaft.

NOTE: Turning PTO shaft at rear of tractor during engine installation will aid in alignment of PTO clutch and shaft.

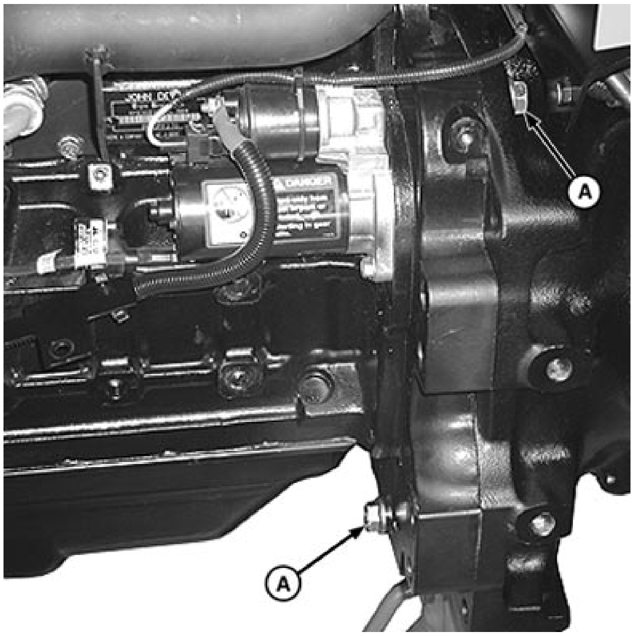
5. Install engine to clutch housing.

6. 4-Cylinder Engines: Install two cap screws (A) and two cap screws (B) on both sides of engine. Tighten to specification.

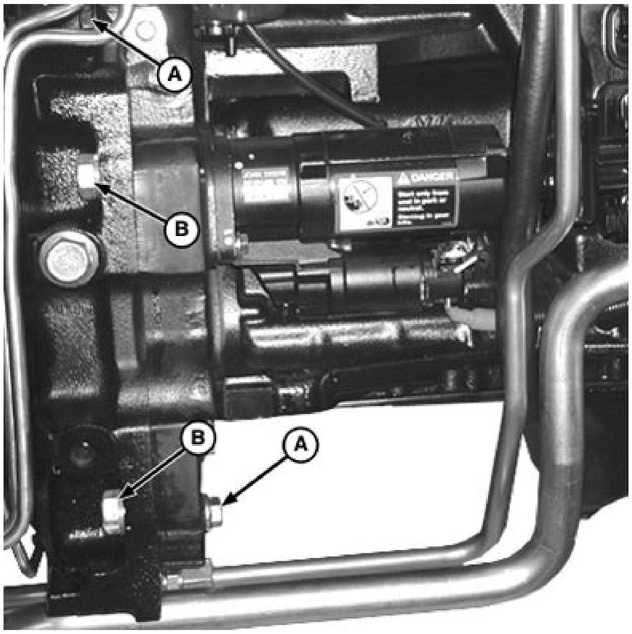
Specification	
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (4-Cylinder)—Torque	260 N•m (192 lb-ft)
Clutch Housing-to-Engine M20 Cap Screw (4-Cylinder)—Torque	430 N•m (317 lb-ft)

7. 5-Cylinder Engines: Install two engine/flywheel housing-to-clutch housing cap screws (A) on both sides of engine and tighten to specification.

Specification	
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (5-Cylinder)—Torque	260 N•m (192 lb-ft)



5-Cylinder Engine



4-Cylinder Engine

A—Cap Screw
B—Cap Screw

Continued on next page

CAUTION: Side frame is heavy. Support frame while installing to prevent personal injury.

8. 5-Cylinder Engines: Install side frames (E) and install two clutch housing-to-side frame cap screws (C). Snug cap screws only at this time.

9. 5-Cylinder Engines: Install two side frame-to-engine cap screws (A) to each side frame. Snug cap screws only at this time.

10. 5-Cylinder Engines: Torque cap screws to specification in the following sequence.

    - Torque two clutch housing-to-side frame cap screws (C) on each side.

Specification

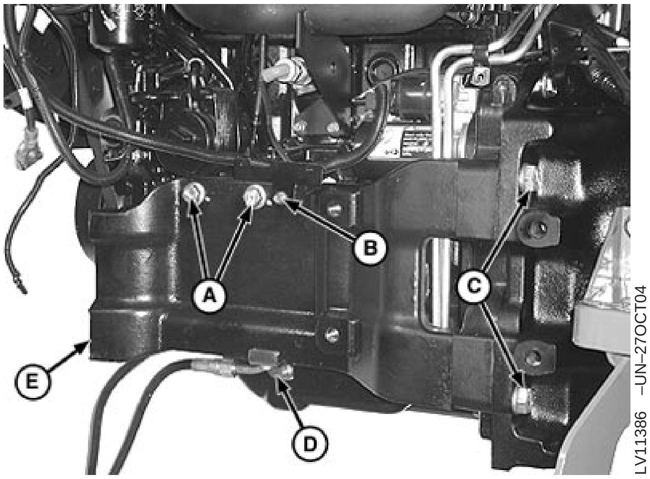
Clutch Housing-to-Side Frame Cap Screw (5-Cylinder)—Torque .... 430 N•m (317 lb-ft)

    - Torque two side frame-to-engine cap screws (A) on each side.

Specification

Side Frame-to-Engine Cap Screw (5-Cylinder)—Torque .... 340 N•m (251 lb-ft)

11. 5-Cylinder Engines: Install harness bracket (B) and line bracket (D) on left side frame.



A—Cap Screw
B—Harness Bracket
C—Cap Screw
D—Line Bracket
E—Side Frame

Continued on next page

OUO6083,0008083 –19–14OCT04–2/18

CAUTION: Front support assembly is heavy. Support assembly while installing to prevent personal injury.

12. Attach hoist to front support and install front support.

13. 5-Cylinder Engines: Install two front support-to-side frame cap screws (A) to each side of front support. Tighten cap screws to specification.

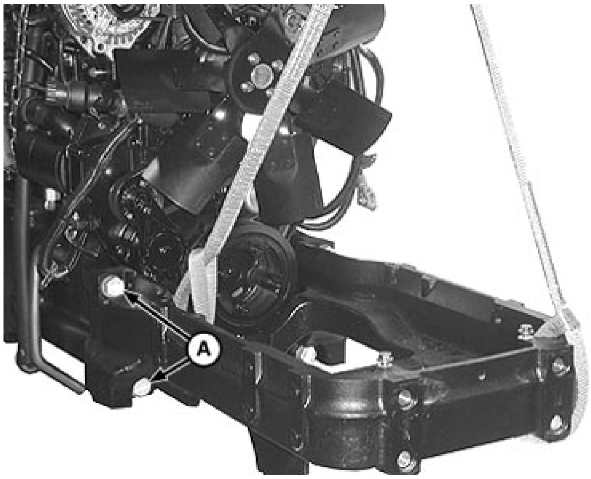
Specification

Front Support-to-Side Frame Cap Screw (5-Cylinder)—Torque .... 430 N•m (317 lb-ft)

14. 4-Cylinder Engines: Install cap screw (A), cap screw (B) and nut (C) to each side of front frame.Tighten cap screws (A and B) and nuts (C) to specifications.

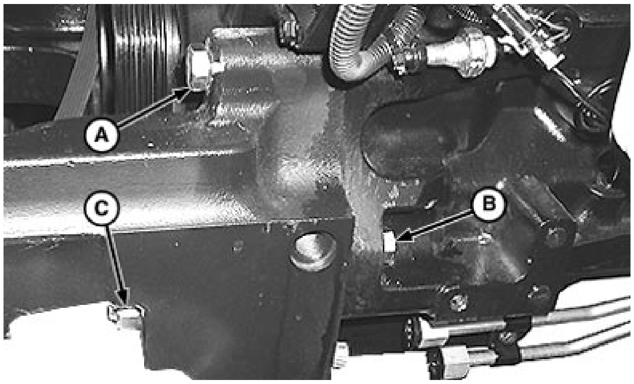
Specification

Engine-to-Front Support Top Cap Screw (4-Cylinder)—Torque	318 N•m (235 lb-ft)
Engine-to-Front Support Lower Cap Screw (4-Cylinder)—Torque	162 N•m (119 lb-ft)
Engine-to-Front Support Nut (4-Cylinder)—Torque	318 N•m (235 lb-ft)



LV11385 –UN–27OCT04

5-Cylinder Engine



LV11268 –UN–03NOV04

4-Cylinder Engine

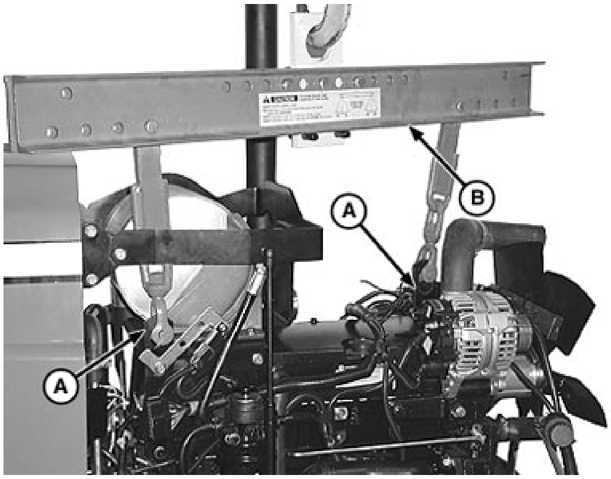
A—Cap Screw
B—Cap Screw
C—Nut

OUO6083,0008083 –19–14OCT04–3/18

15. Remove hoist and engine lift sling (B).

16. Remove lift brackets (A).

A—Engine Lift Bracket (2 used)
B—Engine Lift Sling



LV11384 –UN–27OCT04

Continued on next page

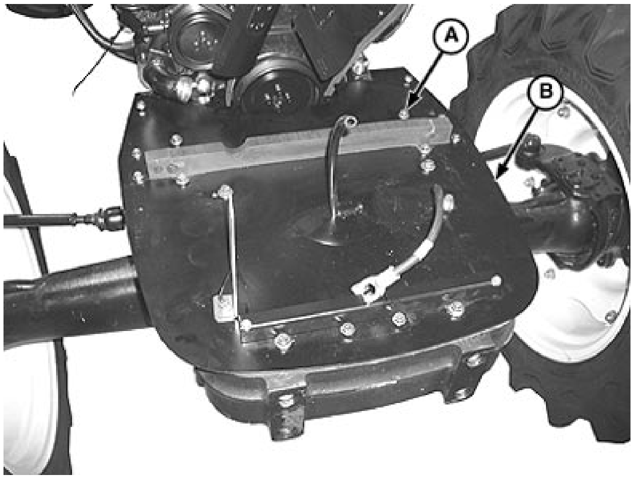
OUO6083,0008083 –19–14OCT04–4/18

17. Install front axle assembly. (See Remove and Install Front Axle—2WD in Section 80, Group 05 or Remove and Install MFWD Axle Housing Assembly in Section 50, Group 35.)

18. Install plate (B) and cap screws (A).

19. Install front weight support, if equipped.

A—Cap Screw (6 used)
B—Plate

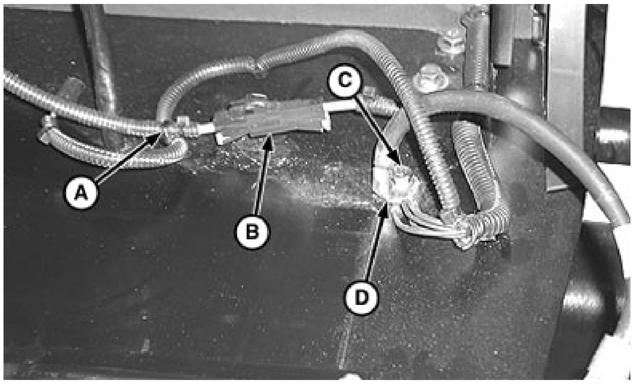


LV11266 –UN–20OCT04

OUO6083,0008083 –19–14OCT04–5/18

20. Pull wiring harnesses (D) to front of tractor, connect connector (B), and install cap screw (C). Install tie straps (A) as needed.

A—Tie Straps
B—Connector
C—Cap Screw
D—Wiring Harness (2 used)



LV11269 –UN–20OCT04

Continued on next page

OUO6083,0008083 –19–14OCT04–6/18

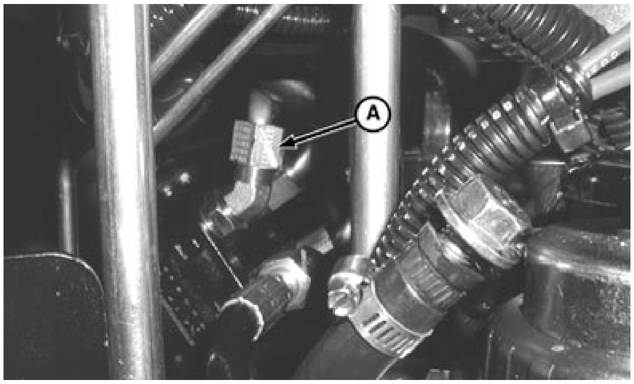
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

21. Connect steering hose (A) to steering valve.

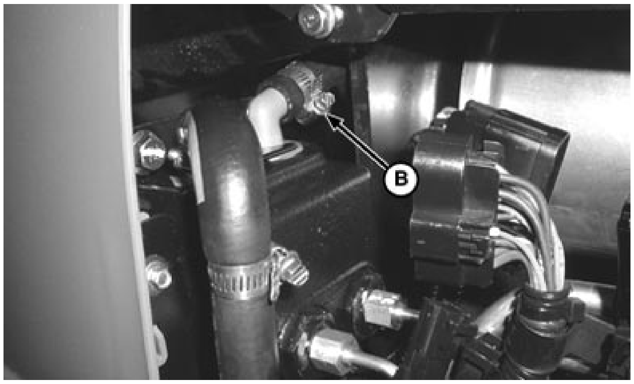
22. Connect hydraulic hose (B) to brake valve.

23. Connect two steering lines (C).

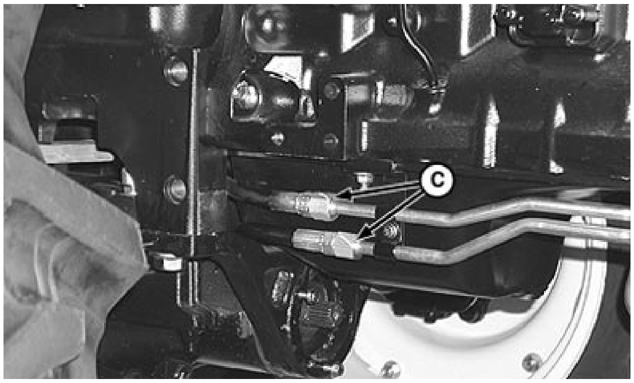
A—Steering Hose
B—Hydraulic Hose
C—Steering Lines (2 used)



LV10903 –UN–07OCT04



LV10933 –UN–07OCT04



LV11265 –UN–20OCT04

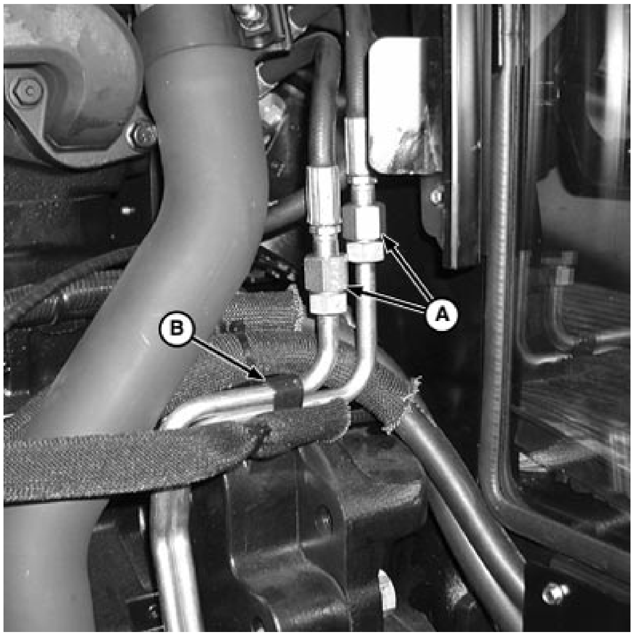
Continued on next page OUO6083,0008083 –19–14OCT04–7/18

NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

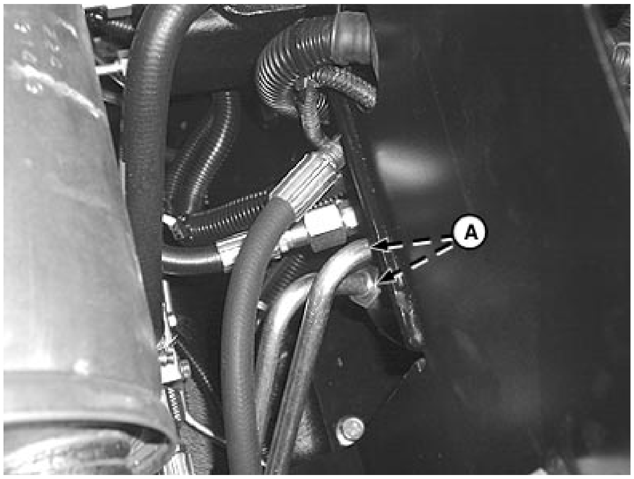
24. Install line clamp (B).

25. Connect two steering lines (A).

A—Steering Lines (2 used)
B—Line Clamp


B
A
LV10904 –UN–06OCT04

IOOS and Cab Tractors


A
LV11383 –UN–22OCT04

Straddle Mount Tractors

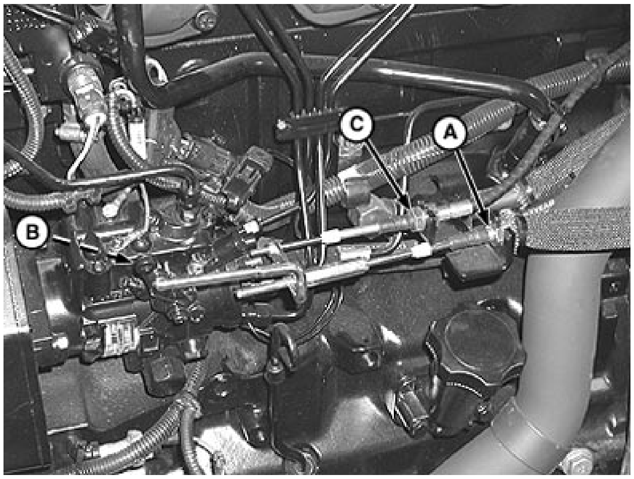
Continued on next page

OUO6083,0008083 –19–14OCT04–8/18

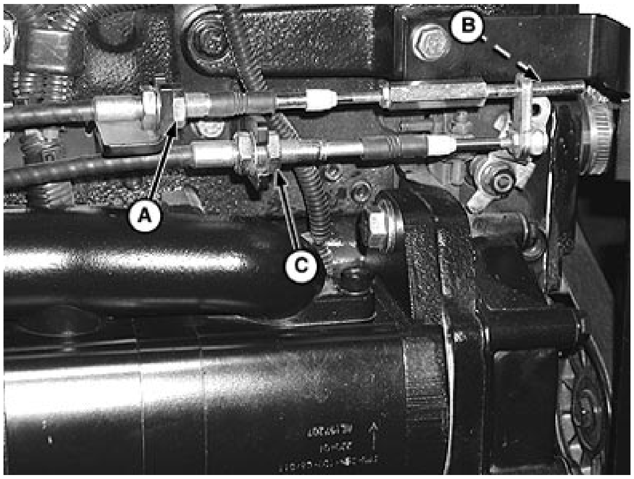
26. Install throttle linkage and tighten nut (C), install cotter pin (B).

    If equipped, install 540/540E cable and tighten nut (A).

A—Nut—540/540E Cable
B—Cotter Pin
C—Nut—Throttle Cable


C
A
B
LV11356 –UN–20OCT04

4-Cylinder


B
A
C
LV11357 –UN–20OCT04

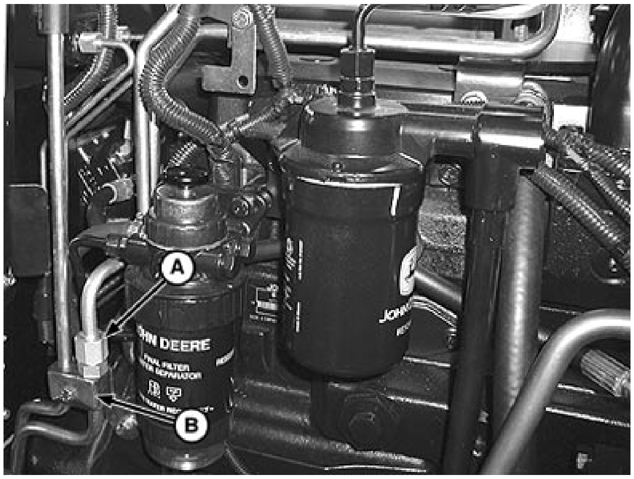
5-Cylinder

Continued on next page

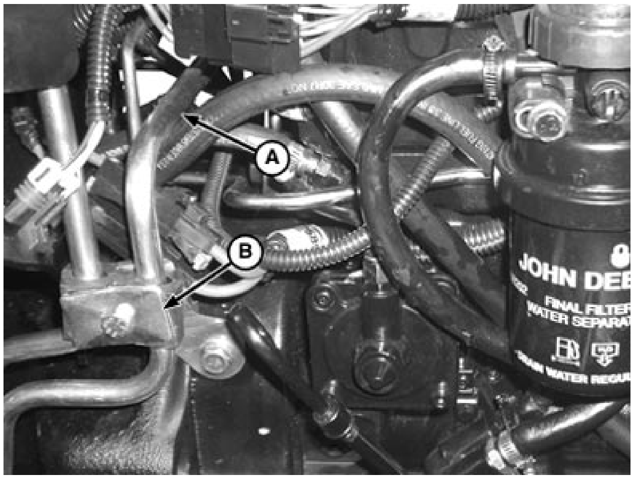
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

27. Connect steering return line (A) and install line clamp (B).

A—Steering Return Line
B—Line Clamp


A
B
LV11418 –UN–28OCT04

Return Line With Hydraulic Oil Cooler


A
B
LV11419 –UN–28OCT04

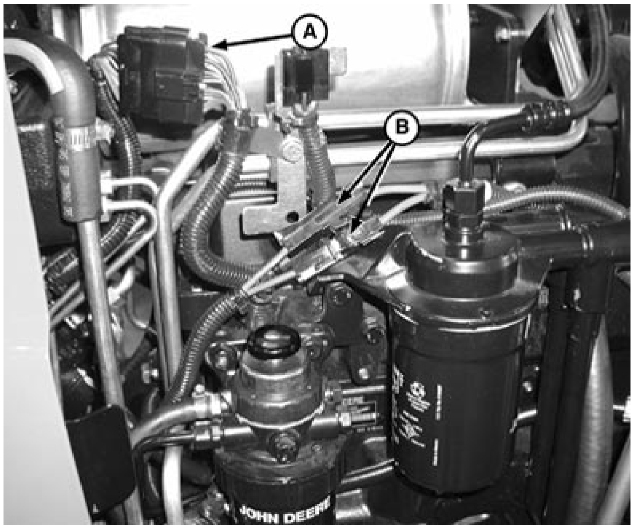
Return Line Without Hydraulic Oil Cooler

OUO6083,0008083 –19–14OCT04–10/18

NOTE: Install tie straps as needed.

28. Connect wiring harness connectors (A and B).

A—Main Wiring Harness Connector
B—Wiring Harness Connectors (2 used)


A
B
LV10901 –UN–06OCT04

Continued on next page

OUO6083,0008083 –19–14OCT04–11/18

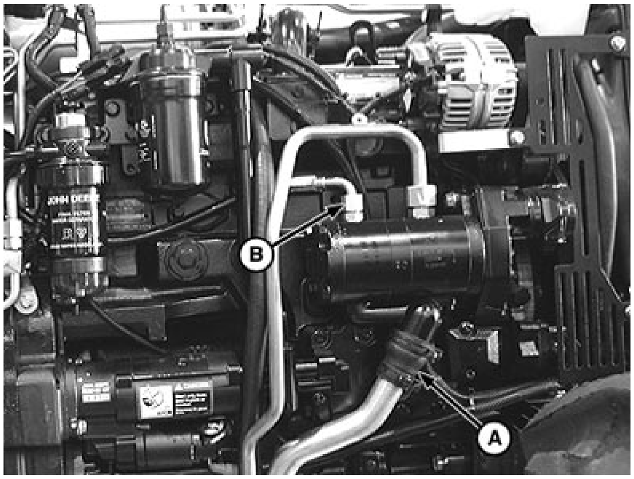
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

29. Install hydraulic pump suction line (A) to pump.

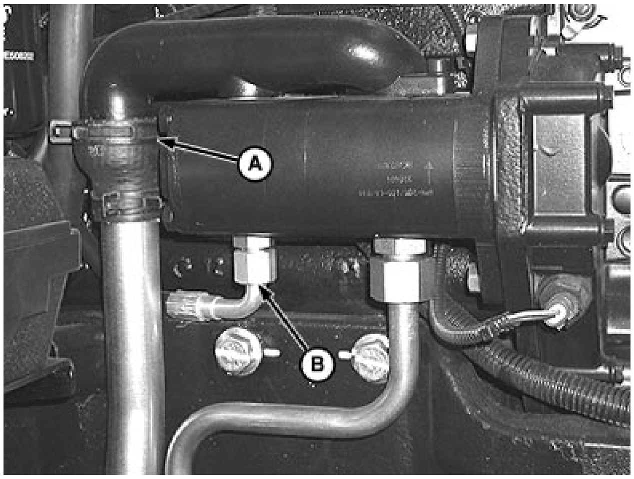
30. Connect hydraulic steering supply line (B).

31. Connect main hydraulic supply line (C).

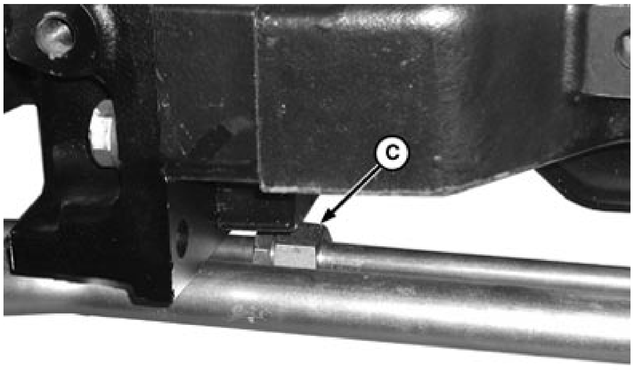
A—Hydraulic Pump Suction Line
B—Hydraulic Steering Supply Line
C—Main Hydraulic Supply Line


B
A
LV11308 –UN–20OCT04

4-Cylinder


A
B
LV11309 –UN–20OCT04

5-Cylinder

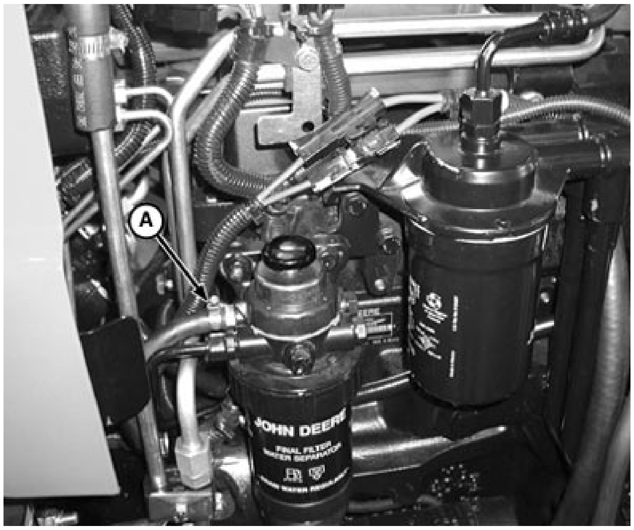

C
LV11310 –UN–20OCT04

Continued on next page

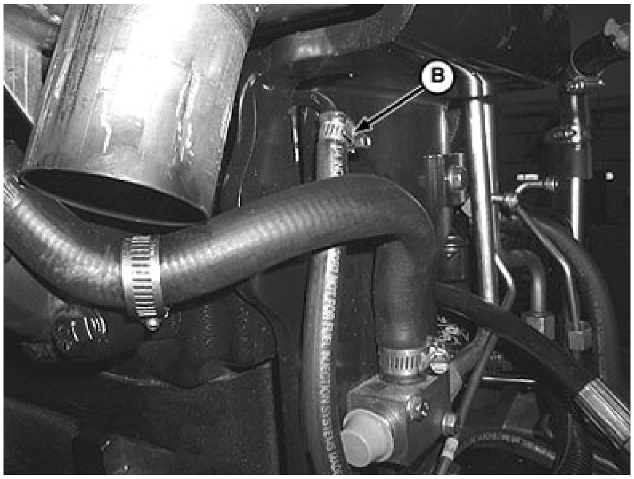
OUO6083,0008083 –19–14OCT04–12/18

32. Connect fuel supply and return hoses (A and B).

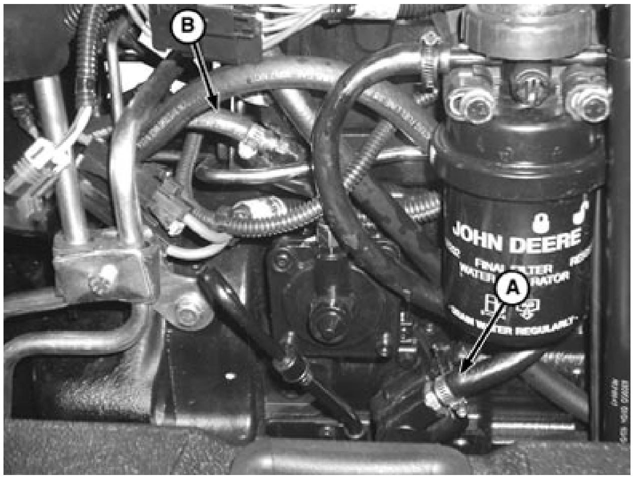
A—Fuel Supply Hose
B—Fuel Return Hose


A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV10899 –UN–06OCT04

4-Cylinder Supply Hose


B
LV11307 –UN–20OCT04

4-Cylinder Return Hose


B
A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV11306 –UN–20OCT04

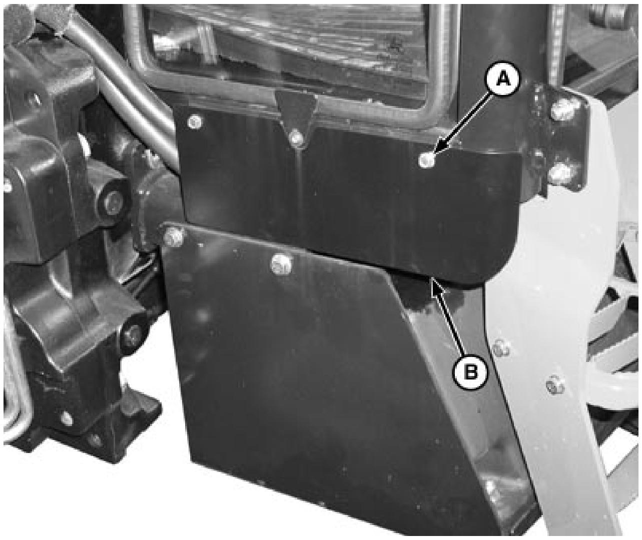
5-Cylinder Hoses

Continued on next page

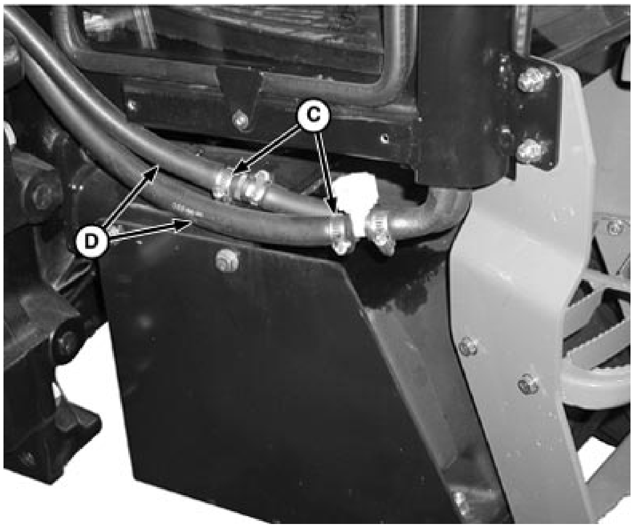
33. Tractors Equipped With Cab: Connect heater hoses (D) and install hose clamps (C).

34. Tractors Equipped With Cab: Install left-hand side crop guard (B) and cap screws (A).

A—Cap Screw (2 used)
B—Left-Hand Side Crop Guard
C—Hose Clamp (2 used)
D—Heater Hoses



LV10905 –UN–13OCT04



LV10906 –UN–06OCT04

Continued on next page

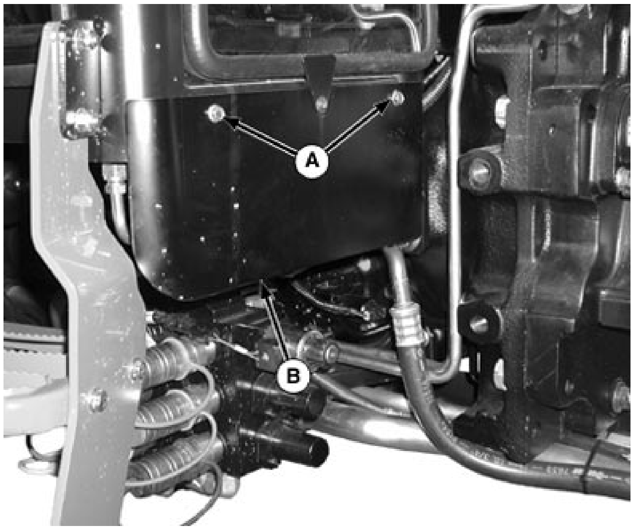
OUO6083,0008083 –19–14OCT04–14/18

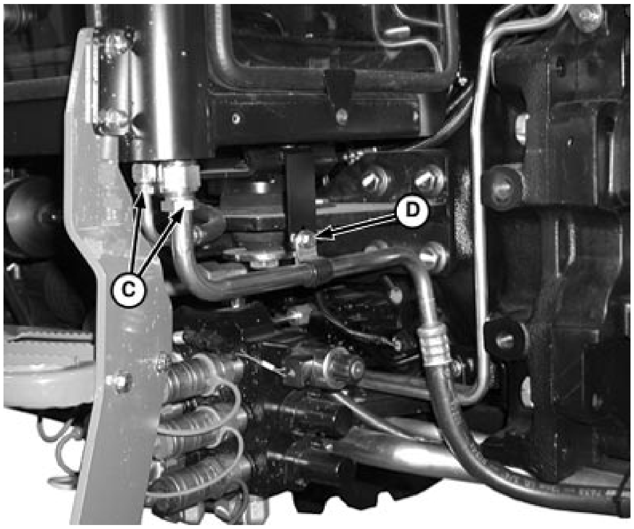
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

35. Tractors Equipped With Cab: Connect air conditioning lines (C) and install clamp (D).

36. Tractors Equipped With Cab: Install right-hand side crop guard (B) and cap screws (A).

A—Cap Screw (2 used)
B—Right-Hand Side Crop Guard
C—Air Conditioning Line (2 used)
D—Clamp





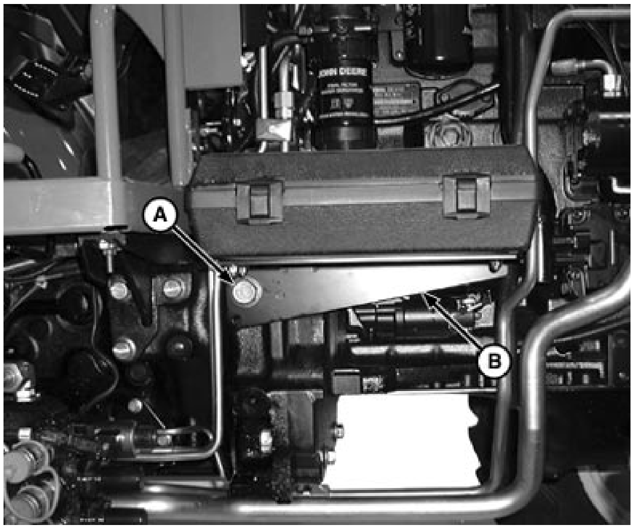
OUO6083,0008083 –19–14OCT04–15/18

37. Install toolbox (B) and cap screw (A), if equipped.

38. Install radiator. (See Remove and Inspect Radiator in Section 50, Group 10.)

39. Install MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

A—Cap Screw
B—Toolbox



Continued on next page

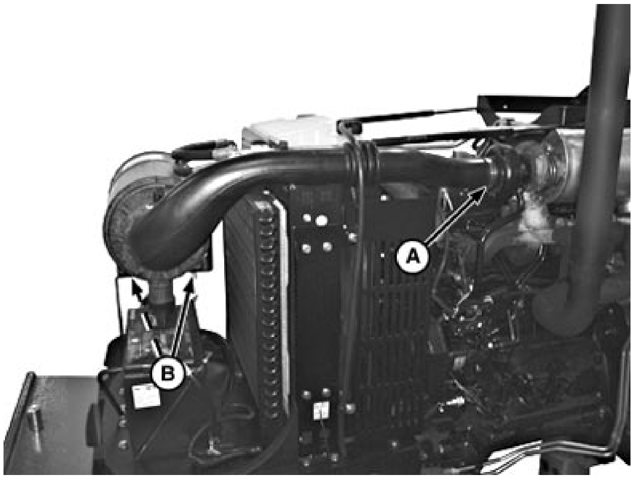
OUO6083,0008083 –19–14OCT04–16/18

NOTE: Cab tractors equipped with air conditioning: The hydraulic oil cooler is combined with the air conditioning condenser as one unit. The air conditioning condenser must be properly installed. (See Remove, Inspect, and Install Air Conditioning Condenser in Section 90, Group 20.)

40. Install hydraulic oil cooler. (See Remove, Inspect and Install Hydraulic Oil Cooler in Section 70, Group 06.)

41. Install battery. (See Remove and Install Battery in Section 40, Group 05.)

42. Install engine air cleaner assembly, wing bolts (B), and clamp (A).



LV11394 –UN–27OCT04

A—Clamp
B—Wing Bolts

43. Install hood. (See Remove and Install Hood in Section 80, Group 25.)

44. Fill hydraulic fluid to proper level.

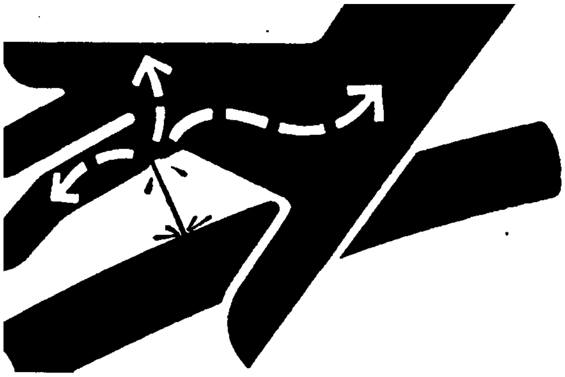
45. Tractors Equipped With Cab: Charge air conditioning system. (See Charge Air Conditioning System in Section 90, Group 20.)

46. Run engine to circulate coolant. Check coolant level and replenish as necessary.

Continued on next page

OUO6083,0008083 –19–14OCT04–17/18

CAUTION: DO NOT use hands to check for leaks with fluid under pressure. Escaping fluid under pressure can penetrate the skin causing serious injury. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



47. With engine running, check for hydraulic leaks. Tighten connections as necessary.

48. Adjust fast idle. (See CTM104 or CTM301.)

OUO6083,0008083 –19–14OCT04–18/18

Specifications

Item	Measurement	Specification
Belt Tensioner	Tension	18—22 N•m (13—16 lb-ft)

JG31785,0000013 –19–30AUG04–1/1

Engine Coolant Pump Repair—Use CTM104 or CTM301

For complete repair information the component technical manual (CTM) is also required. Use the component technical manual in conjunction with this machine manual.

- 5-cylinder 3.0 L engines—Use CTM301
- 4-cylinder 4.5 L engines—Use CTM104

TS225 –UN–17JAN89

JG31785,0000014 –19–30AUG04–1/1

Remove and Install Coolant Recovery Tank

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

TS281 –UN–23AUG88

1. Drain coolant.

Continued on next page

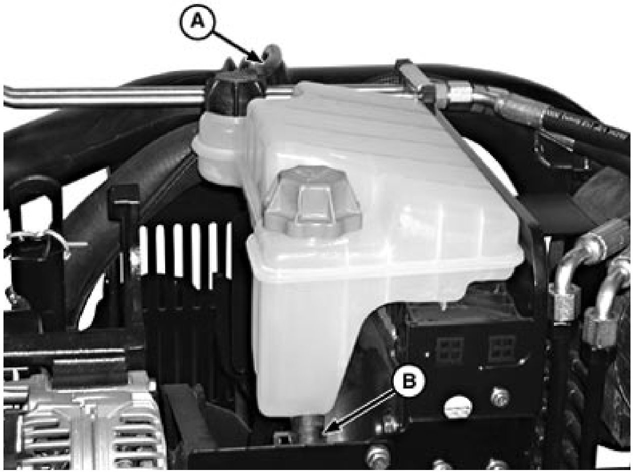
JG31785,000041F –19–16MAR05–1/3

NOTE: Tractor equipped with oil cooler shown; tractors without oil cooler are similar.

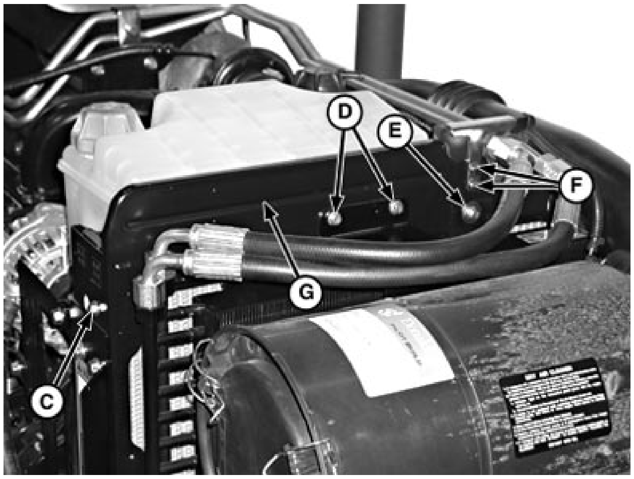
2. Disconnect overflow hose (A) and coolant hose (B).

3. Remove cap screws (C—F) and plate (G).

A—Overflow Hose
B—Coolant Hose
C—Cap Screw (2 used)
D—Cap Screw (2 used)
E—Cap Screw and Washer (2 used)
F—Cap Screw (2 used)
G—Plate



LV12447 –UN–16MAR05



LV12448 –UN–16MAR05

Continued on next page

JG31785,000041F –19–16MAR05–2/3

4. Depress locking tabs (A). Slide coolant recovery tank (B) towards the right side of tractor and remove.

5. Make repairs as needed.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

6. Replace O-rings (C and D).

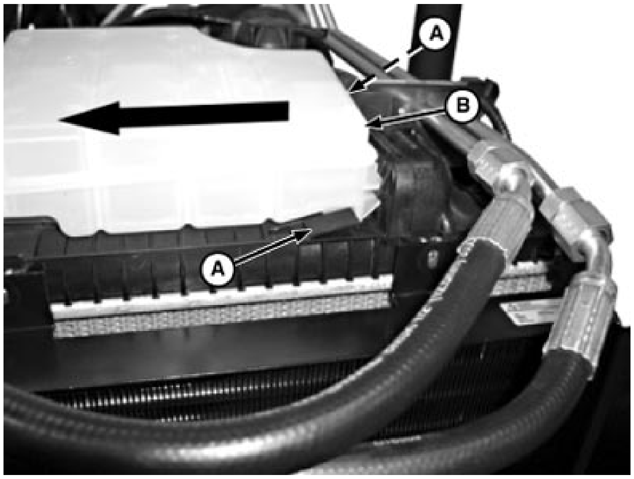
7. Install coolant recovery tank (B). Be sure to engage locking tabs (A).

8. Install plate and cap screws.

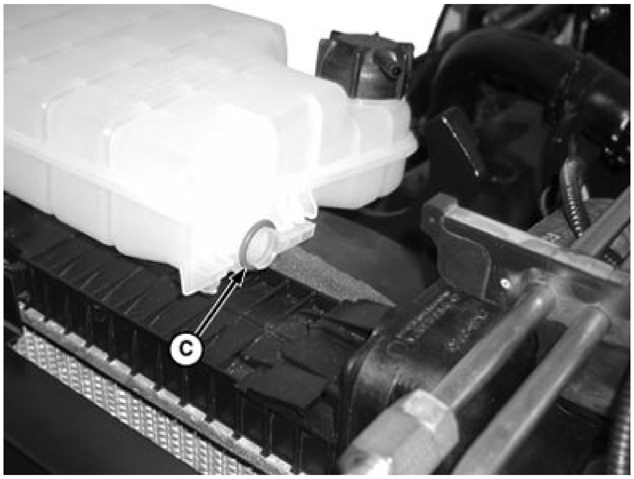
9. Connect coolant hose and overflow hose.

10. Fill radiator with proper coolant. (See Diesel Engine Coolant in Section 10, Group 20.)

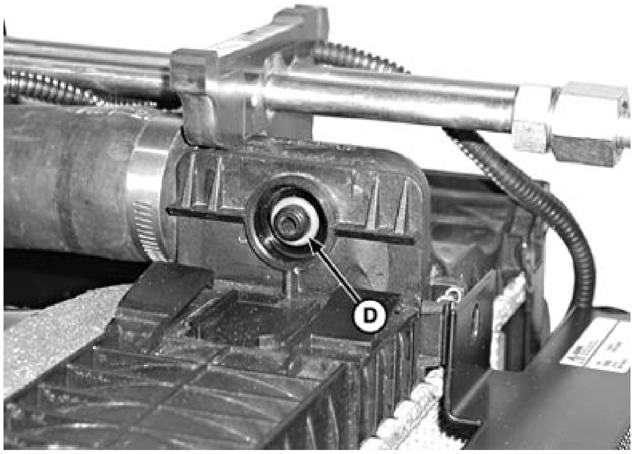
A—Locking Tab (2 used)
B—Coolant Recovery Tank
C—O-Ring
D—O-Ring



LV12449 –UN–16MAR05



LV12450 –UN–16MAR05



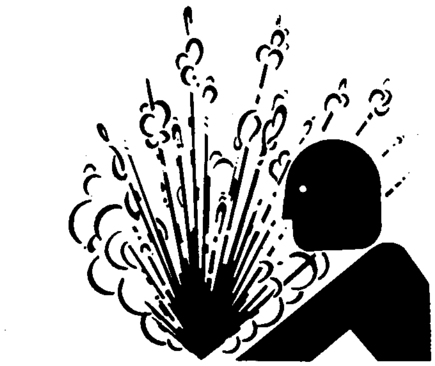
LV12451 –UN–16MAR05

JG31785,000041F –19–16MAR05–3/3

Remove and Inspect Radiator

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.



TS281 –UN–23AUG88

NOTE: 4-cylinder tractor shown. 5-cylinder tractor is similar.

NOTE: 4-cylinder engine cooling system capacity is approximately 11.4 L (3 gal). 5-cylinder engine cooling system capacity is approximately 9.5 L (2.5 gal).

1. Drain coolant.
2. Remove air cleaner, air intake tube, and air cleaner support bracket.
3. Tractors Equipped With Cab: remove air conditioning condenser. (See Remove, Inspect, and Install Air Conditioning Condenser in Section 90, Group 20.)
4. Remove hydraulic oil cooler, if equipped. (See Remove, Inspect, and Install Hydraulic Oil Cooler in Section 70, Group 06.)

Continued on next page

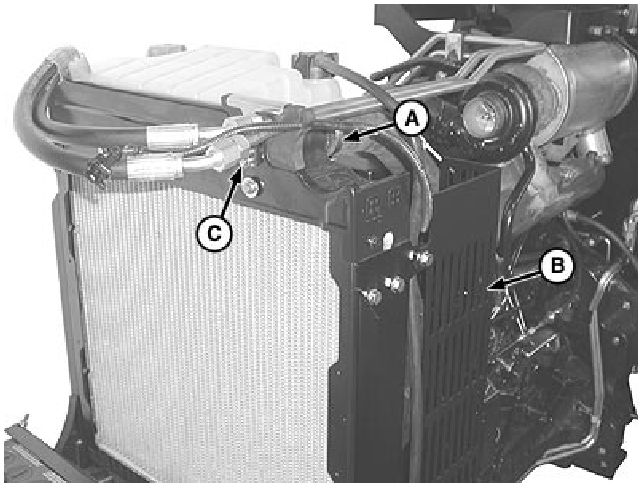
JG31785,0000015 –19–30AUG04–1/4

5. Remove fan guard (B) from both sides of radiator.

6. Remove hydraulic oil line hold-down (C), if equipped.

7. Disconnect upper radiator hose (A).

A—Upper Radiator Hose
B—Fan Guard (2 used)
C—Hydraulic Oil Line Hold-Down



LV10131 –UN–25AUG04

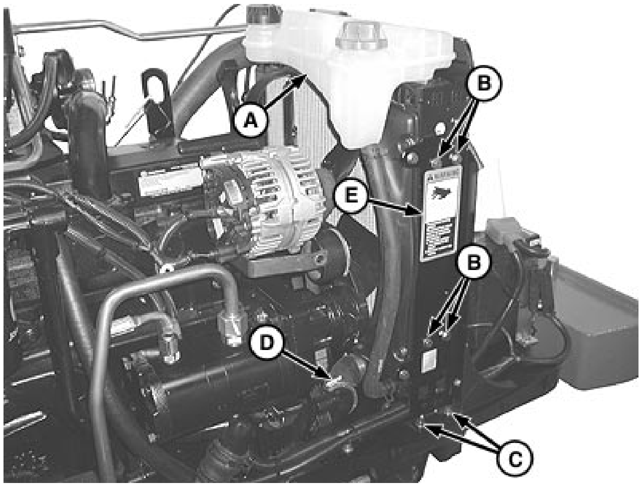
JG31785,0000015 –19–30AUG04–2/4

8. Remove recovery tank (A). (See Remove and Install Coolant Recovery Tank in Section 20, Group 10.)

9. Loosen lower radiator hose (D) at coolant pump.

10. Remove four cap screws (B), two cap screws (C), and radiator support (E) from both sides.

A—Recovery Tank
B—Cap Screws (8 used)
C—Cap Screws (4 used)
D—Lower Radiator Hose
E—Radiator Support



LV10132 –UN–25AUG04

Continued on next page

JG31785,0000015 –19–30AUG04–3/4

NOTE: Move fan shroud (B) rearward over fan to aid during removal of radiator.

11. Remove four cap screws (A) and separate fan shroud (B) from radiator.

12. Remove radiator.

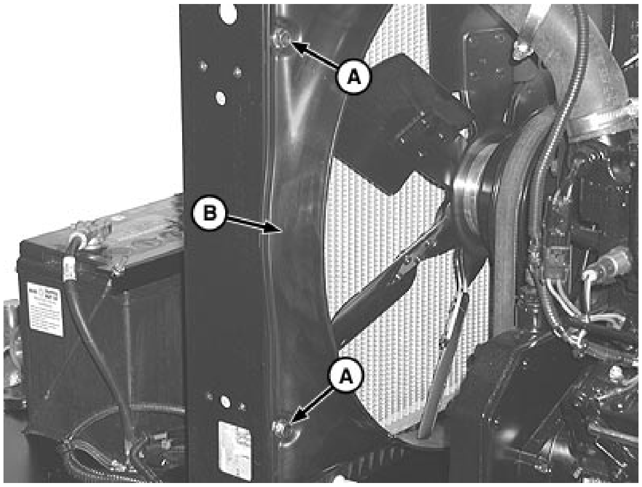
13. Remove lower radiator hose (C).

CAUTION: Reduce compressed air to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment, including eye protection.

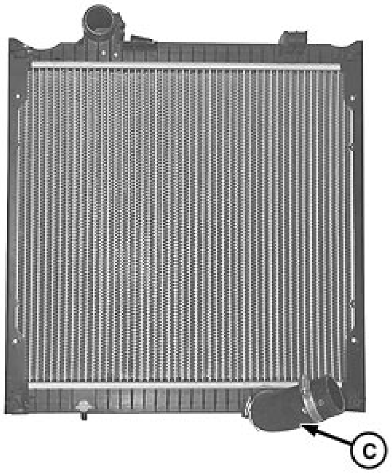
14. Check radiator for debris lodged in fins. Clean radiator using compressed air or pressure washer.

15. Inspect radiator for bent fins, cracks, and damaged seams. Repair as necessary.

A—Cap Screw (4 used)
B—Fan Shroud
C—Lower Radiator Hose



LV10133 –UN–25AUG04



LV10134 –UN–25AUG04

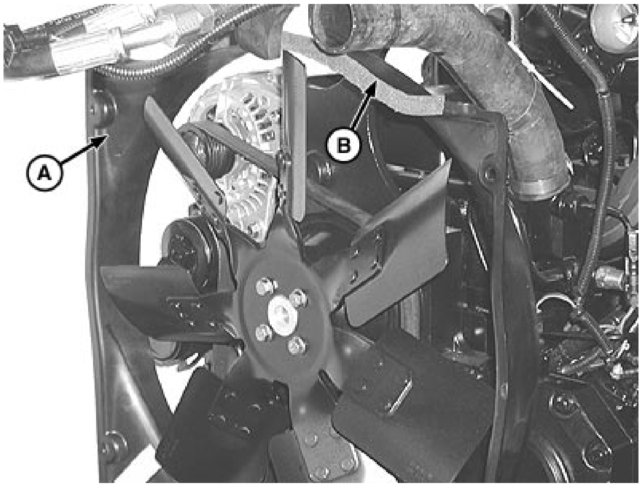
JG31785,0000015 –19–30AUG04–4/4

Install Radiator

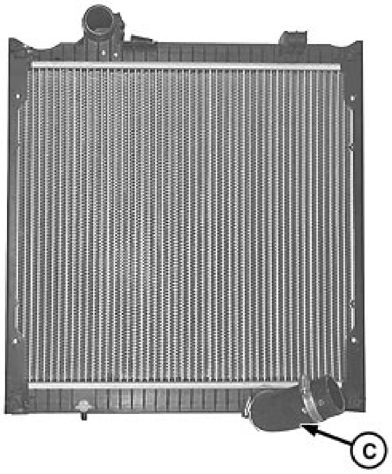
1. Place fan shroud (A) over cooling fan, with hose notch (B) at top.

2. Install lower radiator hose (C).

A—Fan Shroud
B—Hose Notch
C—Lower Radiator Hose



LV10135 –UN–25AUG04

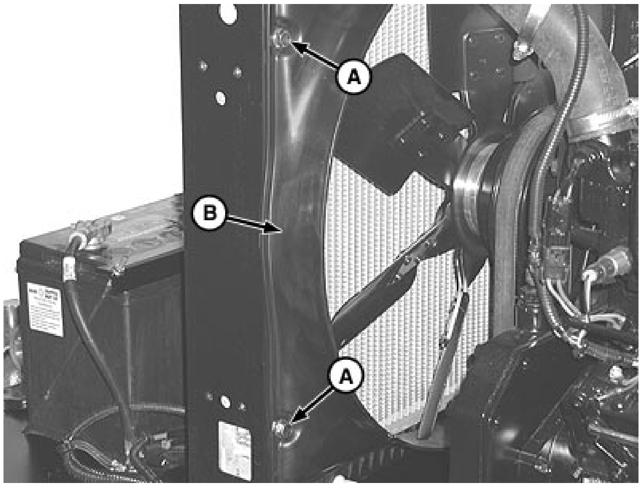


LV10134 –UN–25AUG04

JG31785,0000016 –19–30AUG04–1/4

3. Install radiator on front of tractor. Install fan shroud (B) and four cap screws (A). Check fan shroud (B) for clearance around engine cooling fan.

A—Cap Screw (4 used)
B—Fan Shroud



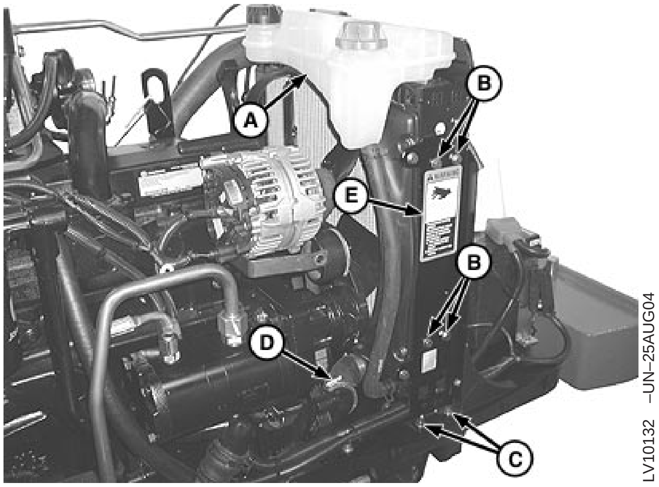
LV10133 –UN–25AUG04

Continued on next page

JG31785,0000016 –19–30AUG04–2/4

4. Install radiator support (E), two cap screws (C), and four cap screws (B) to both sides.

5. Tighten lower radiator hose (D) and install recovery tank (A). (See Remove and Install Coolant Recovery Tank in Section 20, Group 10.)



A—Recovery Tank
B—Cap Screw (8 used)
C—Cap Screw (4 used)
D—Lower Radiator Hose
E—Radiator Support

Continued on next page

6. Install upper radiator hose (B) and fan guard (C) on both sides of radiator.

7. Install hydraulic oil line hold-down (A), if equipped.

8. Install hydraulic oil cooler, if equipped. (See Remove, Inspect, and Install Hydraulic Oil Cooler in Section 70, Group 06.)

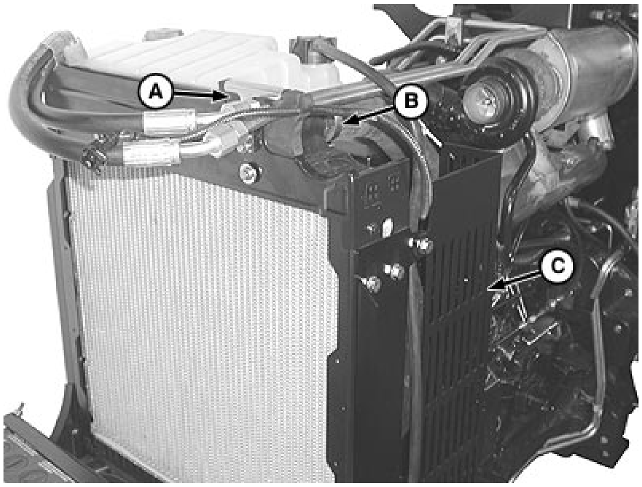
9. Tractors Equipped With Cab: install air conditioning condenser. (See Remove, Inspect, and Install Air Conditioning Condenser in Section 90, Group 20.)

10. Install air cleaner support bracket, air cleaner, and air intake tube.

IMPORTANT: Air must be expelled from cooling system when filling. Loosen temperature sending unit at rear of cylinder head or plug in thermostat housing to allow air to escape when filling system. Tighten fitting or plug when all air has been expelled.

11. Close drain valve and fill radiator with proper coolant. (See Diesel Engine Coolant in Section 10, Group 20.)

12. Start engine and allow it to reach proper operating temperature. Check radiator, hoses, and connections for leaks. Adjust coolant level in recovery tank.



LV10147 –UN–25AUG04

A—Hydraulic Oil Line Hold-Down
B—Upper Radiator Hose
C—Fan Guard (2 used)

JG31785,0000016 –19–30AUG04–4/4

Remove and Install Thermostat—4-Cylinder Engine

TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

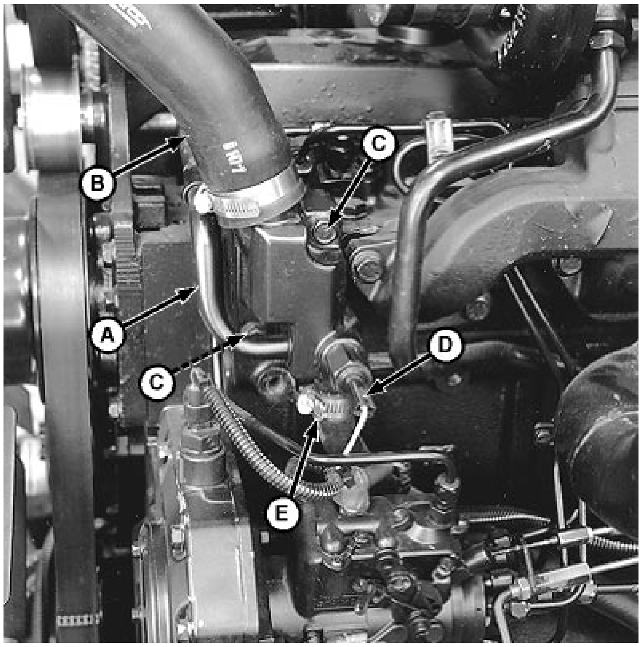
Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

1. Drain radiator below level of thermostat housing.

NOTE: Tractor with cab shown; procedure for tractors without cab is similar.

Fan guard removed only for illustration purposes.

2. Disconnect bypass tube (A) from thermostat housing.
3. Remove upper radiator hose (B).
4. Disconnect wire connector (D).
5. Tractors Equipped With Cab: Remove heater hose (E).
6. Remove cap screws (C).



LV2200 –UN–16DEC97

A—Bypass Tube
B—Upper Radiator Hose
C—Cap Screw (2 used)
D—Wire Connector
E—Heater Hose (Cab Tractors Only)

Continued on next page

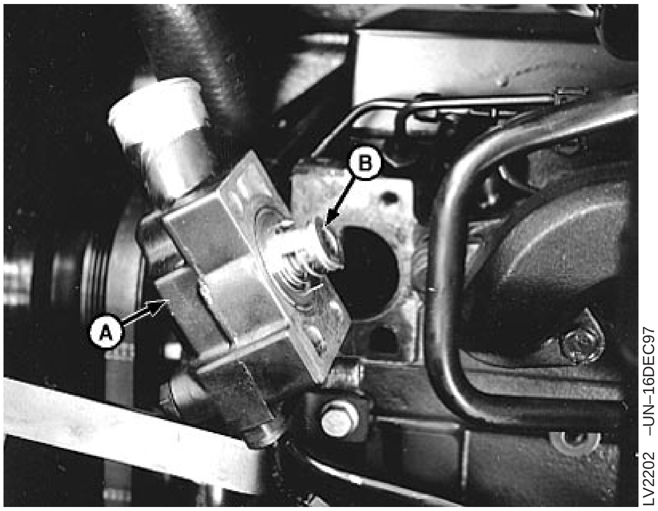
JG31785,0000017 –19–30AUG04–1/3

7. Remove thermostat housing (A) and thermostat (B).

8. Clean mating surfaces of thermostat housing (A) and cylinder head.

NOTE: Install new thermostat with jiggle pin at top to improve de-aeration of coolant.

9. Replace thermostat (B) and install new gasket.



A—Thermostat Housing
B—Thermostat

JG31785,0000017 –19–30AUG04–2/3

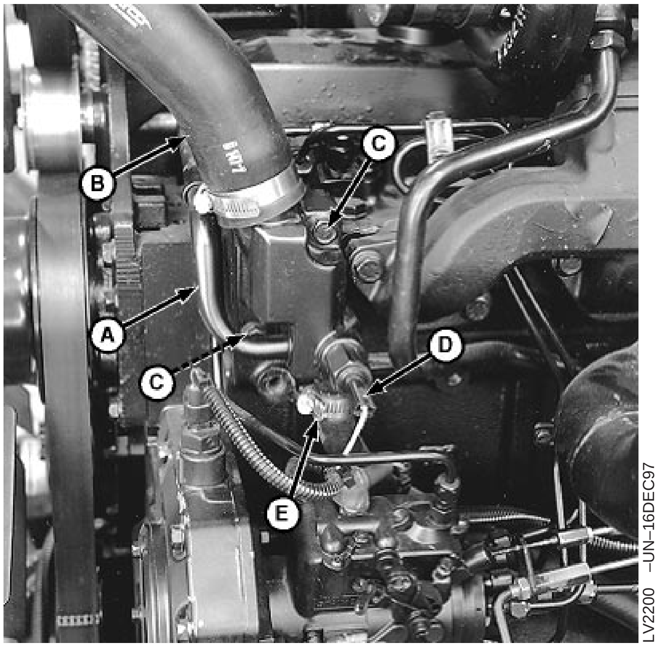
10. Install thermostat housing and cap screws (C).

11. Connect bypass tube (A) and upper radiator hose (B).

12. Connect wire connector (D) and cab heater hose (E), if equipped.

IMPORTANT: Air must be expelled from cooling system when filling. Loosen temperature sending unit at rear of cylinder head or plug in thermostat housing to allow air to escape when filling system. Tighten fitting or plug when all air has been expelled.

13. Fill radiator with proper coolant. (See Diesel Engine Coolant in Section 10, Group 20.)



A—Bypass Tube
B—Upper Radiator Hose
C—Cap Screw (2 used)
D—Wire Connector
E—Heater Hose (Cab Tractors Only)

JG31785,0000017 –19–30AUG04–3/3

Remove and Install Thermostat—5-Cylinder Engine

TS281 —UN—23AUG88

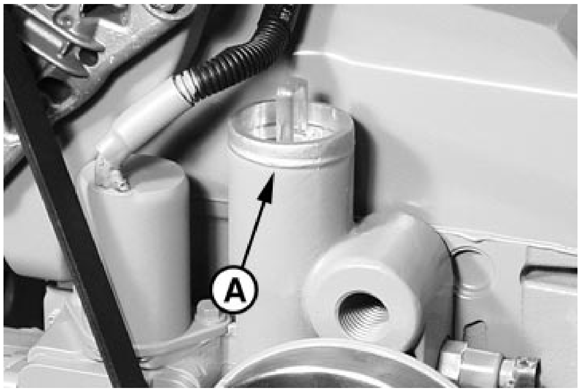
CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

NOTE: Thermostat housing is located on front of engine where upper radiator hose connects to engine.

1. Drain radiator below level of thermostat housing.

2. Remove upper radiator hose (shown removed) from thermostat housing (A).



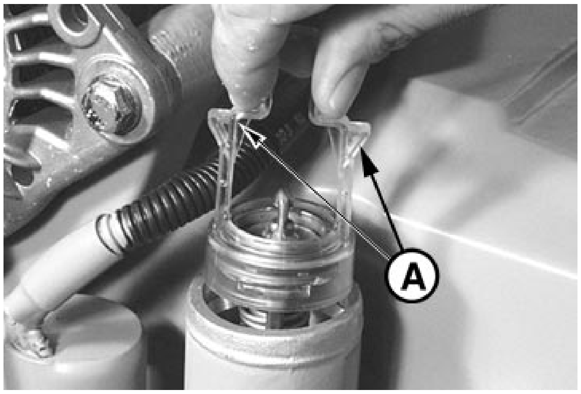
RG12789 —UN—21JAN03

A—Thermostat Housing

JG31785,0000018 —19—30AUG04—1/3

3. Squeeze tabs (A) on thermostat and remove from thermostat housing.

4. Check thermostat housing for cracks or damage.



RG12791 —UN—21JAN03

A— Tabs

Continued on next page

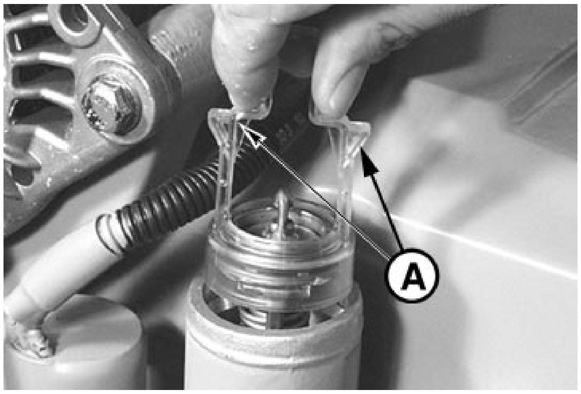
JG31785,0000018 —19—30AUG04—2/3

5. Install thermostat in housing, as shown, until both tabs (A) are fully engaged in the grove in the thermostat housing bore.

6. Install upper radiator hose and tighten clamp.

IMPORTANT: Air must be expelled from cooling system when filling. Loosen temperature sending unit at rear of cylinder head or plug in thermostat housing to allow air to escape when filling system. Tighten fitting or plug when all air has been expelled.

7. Fill radiator with proper coolant. (See Diesel Engine Coolant in Section 10, Group 20.)



A—Tabs

JG31785,0000018 –19–30AUG04–3/3

Inspect and Replace Belt Tensioner—4-Cylinder Engine

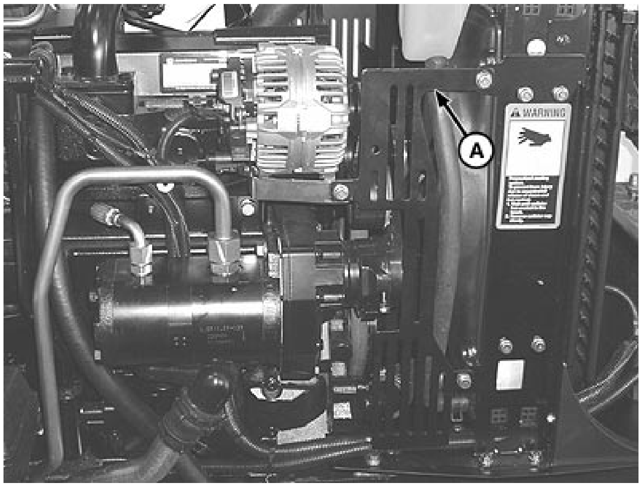
NOTE: Pulley and spring tensioner are not serviceable.

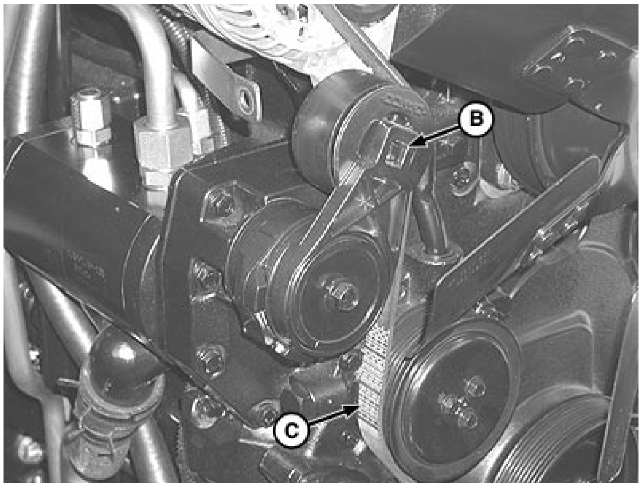
1. Remove right-side fan guard (A).

2. Rotate belt tensioner (B) counterclockwise and remove belt (C) from alternator/regulator pulley.

3. Rotate belt tensioner (B) clockwise to relaxed position.

A—Fan Guard
B—Belt Tensioner
C—Belt





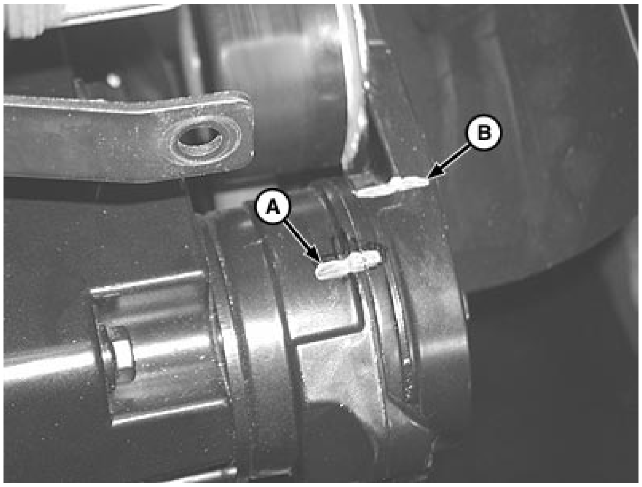
Continued on next page

JG31785,0000019 –19–30AUG04–1/4

NOTE: A belt tension gauge will not give an accurate measurement of the belt tension when automatic belt tensioner is used. Measure tensioner spring tension using a torque wrench and procedure outlined below.

4. Put a mark (B) on swing arm of belt tensioner as shown.

5. Measure 21 mm (0.83 in.) from mark (B) and put a mark (A) on belt tensioner mounting base.



LV10139 –UN–25AUG04

A—Mark—Tensioner Mounting Base
B—Mark—Swing Arm

JG31785,0000019 –19–30AUG04–2/4

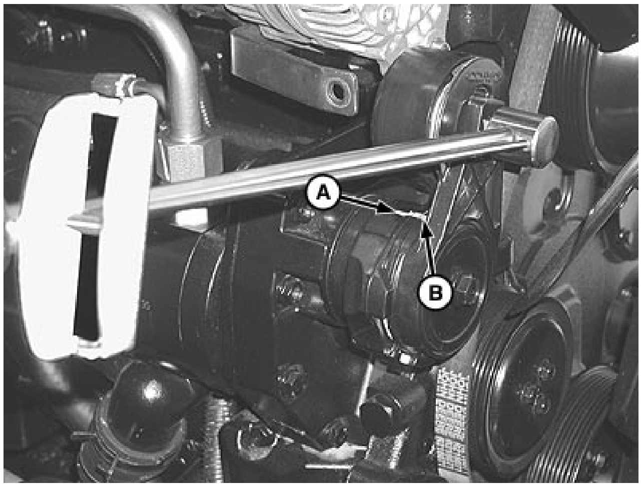
6. Using a torque wrench rotate the belt tensioner swing arm counterclockwise until marks (A and B) are aligned.

7. Record torque wrench measurement and compare with specification below. Replace belt tensioner assembly if recorded measurement is under specification. (See CTM104.)

Specification

Belt Tensioner—Tension .... 18—22 N•m (13—16 lb-ft)

8. Make sure belt is in place, release tensioner and remove tool.



LV10141 –UN–25AUG04

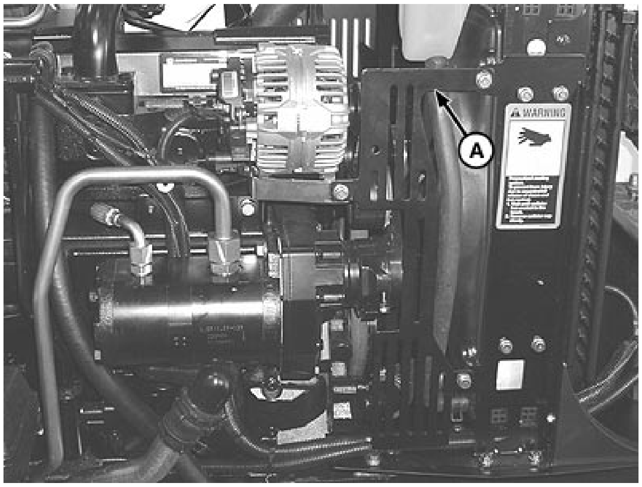
A—Mark—Tensioner Mounting Base
B—Mark—Swing Arm

Continued on next page

JG31785,0000019 –19–30AUG04–3/4

9. Install fan guard (A).

A—Fan Guard



LV10136 –UN–25AUG04

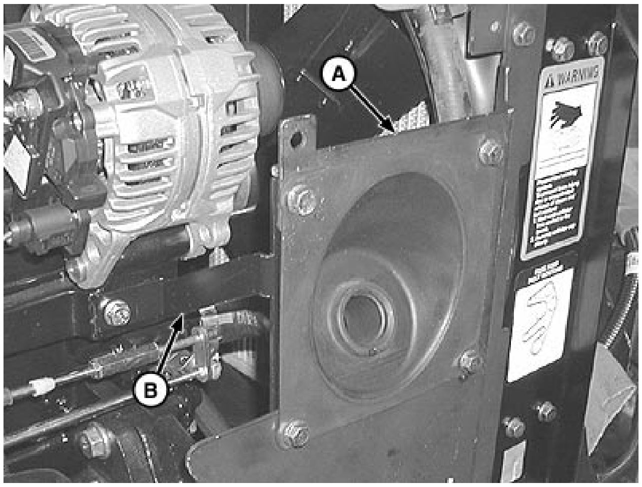
JG31785,0000019 –19–30AUG04–4/4

Inspect and Replace Belt Tensioner—5-Cylinder Engine

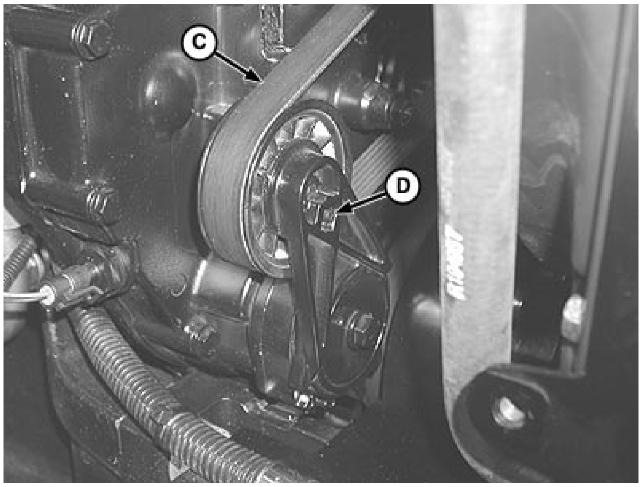
NOTE: Pulley and spring tensioner are not serviceable.

1. Remove right-side fan guard (A) and support bracket (B).
2. Rotate belt tensioner (D) clockwise and remove belt (C) from alternator/regulator pulley.
3. Rotate belt tensioner (D) counterclockwise to relaxed position.

A—Fan Guard
B—Support Bracket
C—Belt
D—Belt Tensioner



LV10232 –UN–27AUG04



LV10138 –UN–25AUG04

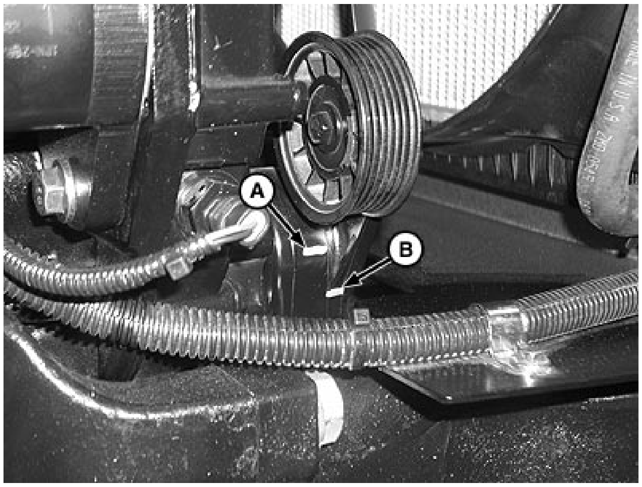
Continued on next page

JG31785,000001A –19–30AUG04–1/4

NOTE: A belt tension gauge will not give an accurate measurement of the belt tension when automatic belt tensioner is used. Measure tensioner spring tension using a torque wrench and procedure outlined below.

4. Put a mark (B) on swing arm of belt tensioner as shown.

5. Measure 21 mm (0.83 in.) from mark (B) and put a mark (A) on belt tensioner mounting base.



LV10140 –UN–25AUG04

A—Mark—Tensioner Mounting Base
B—Mark—Swing Arm

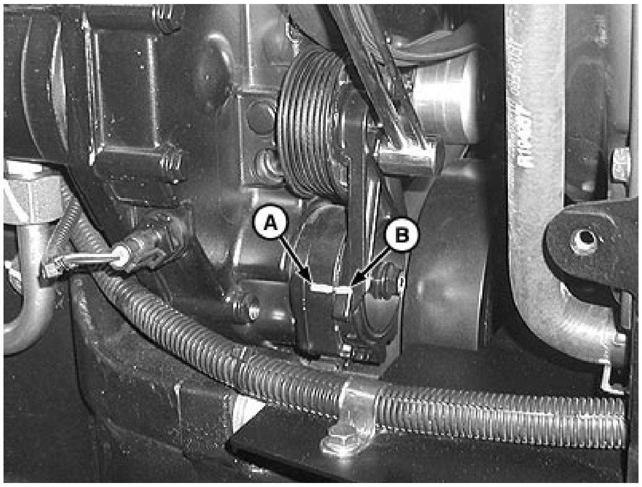
JG31785,000001A –19–30AUG04–2/4

6. Using a torque wrench rotate the belt tensioner swing arm clockwise until marks (A and B) are aligned.

7. Record torque wrench measurement and compare with specification below. Replace belt tensioner assembly if recorded measurement is under specification. (See CTM301.)

Specification	
Belt Tensioner—Tension	18—22 N•m (13—16 lb-ft)

8. Make sure belt is in place, release tensioner and remove tool.



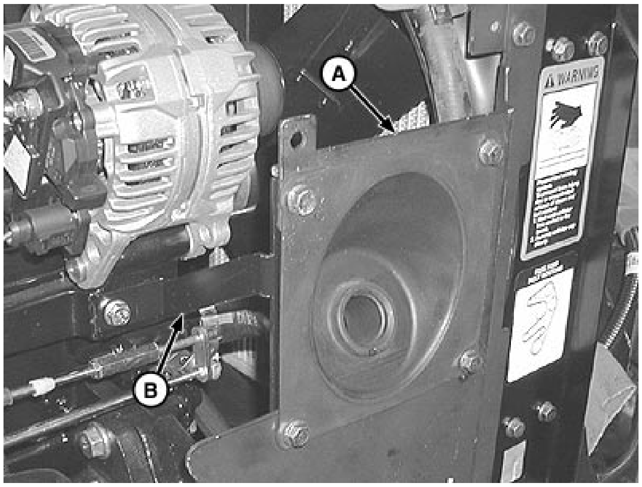
LV10142 –UN–25AUG04

A—Mark—Tensioner Mounting Base
B—Mark—Swing Arm

Continued on next page

JG31785,000001A –19–30AUG04–3/4

9. Install fan guard (A) and support bracket (B).



LV10232 –UN–27AUG04

A—Fan Guard
B—Support Bracket

JG31785,000001A –19–30AUG04–4/4

Section 30
Fuel and Air Repair

Contents

Page

Group 05—Fuel System

Specifications 30-05-1
Injection Pump, Nozzle and Governor Repair—Use CTM104 or CTM301 30-05-1
Remove, Inspect and Install Fuel Tank—Straddle Mount 30-05-2
Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors 30-05-6
Replace Fuel Filter/Water Separator—4-Cylinder Engines .30-05-13
Replace Fuel Filter/Water Separator—5-Cylinder Engines .30-05-13
Remove and Install Fuel Filter/Primer Pump Assembly 30-05-14
Replace Fuel Transfer Pump—5603 and 5625 30-05-15

Group 10—Air Intake System

Turbocharger Repair—Use CTM104 or CTM301. 30-10-1
Specifications 30-10-1
Other Material 30-10-1
Remove, Inspect, and Install Air Cleaner Elements 30-10-2
Remove Turbocharger—4-Cylinder Tractors . . .30-10-4
Install Turbocharger—4-Cylinder Tractors 30-10-5
Remove Turbocharger—5-Cylinder Tractors . . .30-10-6
Install Turbocharger—5-Cylinder Tractors 30-10-7
Turbocharger Break-In 30-10-8

Group 15—Speed Control Linkage

Inspect and Repair Speed Control Linkage—4-Cylinder Engine—Straddle Mount 30-15-2
Inspect and Repair Speed Control Linkage—5-Cylinder Engine—Straddle Mount 30-15-4
Inspect and Repair Speed Control Linkage—5425, 5525 and 5625—Isolated Open Operator Station and Cab Tractors 30-15-6
Inspect and Repair Speed Control Linkage—5603—Cab Tractor. 30-15-8
Inspect and Repair Speed Control Linkage—5-Cylinder Engine—Isolated Open Operator Station and Cab Tractors 30-15-10

Page

Inspect and Repair Speed Control Linkage—540/1000 PTO 30-15-12

Specifications

Item	Measurement	Specification
Fuel Tank Rear Bracket Cap Screws (Isolated Open Operator Station and Cab Tractors)	Torque	350 N•m (255 lb-ft)
Fuel Tank Front Bracket Cap Screws (Isolated Open Operator Station and Cab Tractors)	Torque	80 N•m (60 lb-ft)

OUO1083,00006BF –19–11DEC06–1/1

Injection Pump, Nozzle and Governor Repair—Use CTM104 or CTM301

TS225 –UN–17JAN89

For complete repair information the component technical manual (CTM) is also required. Use the component manual in conjunction with this machine manual.

- 4-cylinder 4.5 L engines—Use CTM104
- 5-cylinder 3.0 L engines—Use CTM301

OUO1083,00006BE –19–11DEC06–1/1

Remove, Inspect and Install Fuel Tank—Straddle Mount

NOTE: Fuel tank capacity for models 5225, 5325, 5425 and 5525 straddle mount tractors is approximately 96.5 L (25.5 gal).

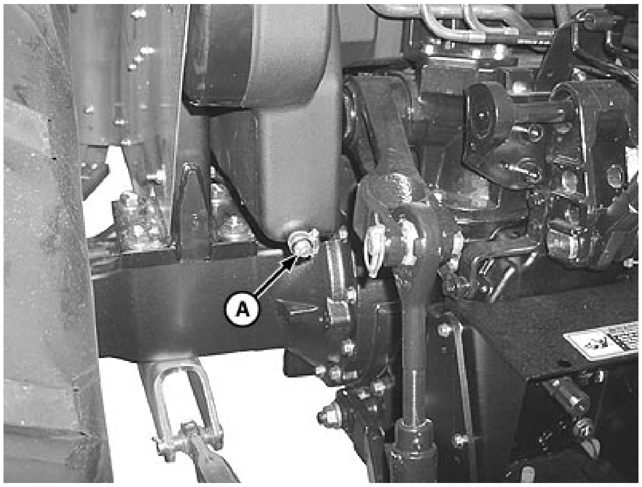
1. Park machine on a flat, level surface.
2. Disconnect battery, negative (—) cable first.
3. Remove drain plug (A) and drain fuel into a proper container. (See Do Not Use Galvanized Containers in Section 10, Group 20.)
4. Install drain plug when fuel tank is empty.

NOTE: Fuel supply hose (B) can be accessed from under tractor.

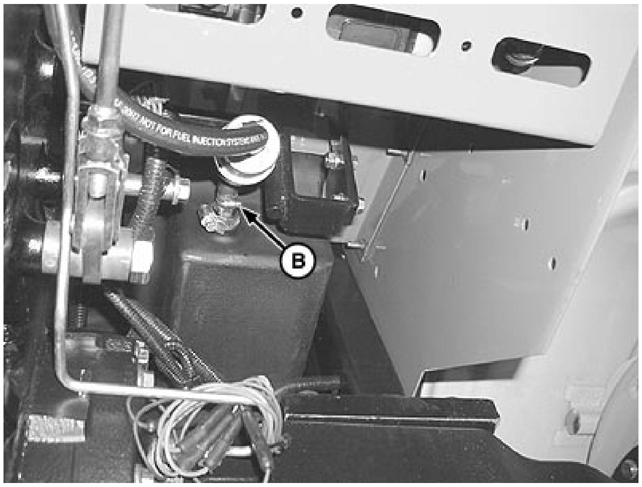
Close all openings using caps and plugs to prevent contamination of fuel system.

5. Disconnect fuel supply hose (B).

A—Fuel Tank Drain Valve
B—Fuel Supply Hose



Tank Drain



Fuel Supply Hose

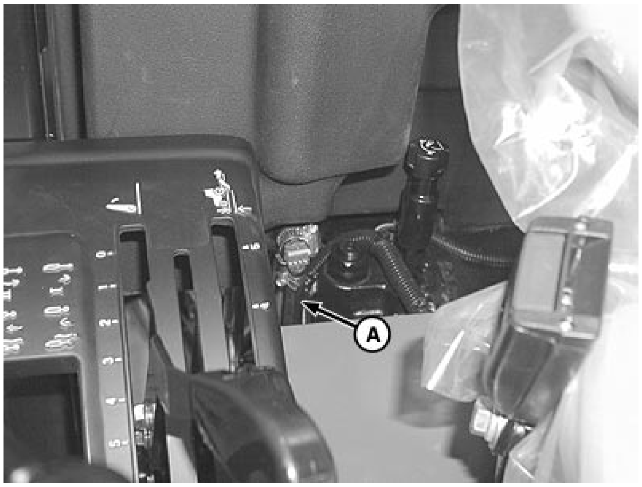
Continued on next page

6. Disconnect fuel return hose (A) located behind operator’s seat.

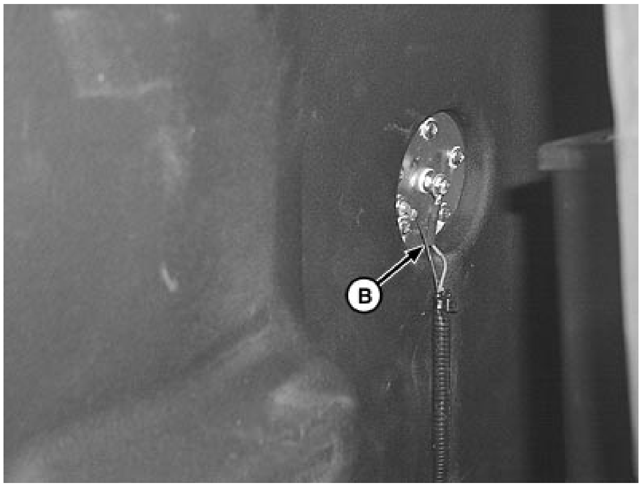
NOTE: Tag or label wiring leads to aid during installation.

7. Disconnect fuel level sender wires (B). Mark wiring leads for proper connection.

A—Fuel Return Hose
B—Fuel Level Sender Wires (2 used)



Fuel Return Hose



Fuel Level Sending Unit

Continued on next page OUO1083,00006B9 –19–11DEC06–2/5

8. Remove cap screw, washer, and nut (A) from left fuel tank strap (D).

9. Remove cap screw (B) and nut (C) from left fuel tank strap (D).

10. Repeat steps 8 and 9 for right fuel tank strap.

11. Lift retaining straps (D) away from tank and remove fuel tank.

12. Inspect fuel tank for damage. Replace if necessary.

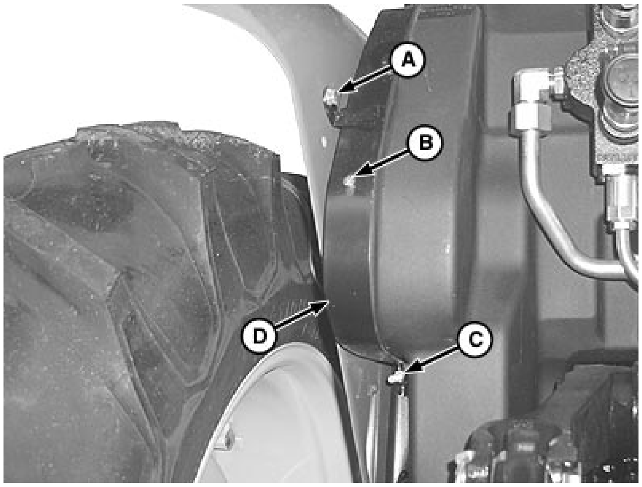
13. Wash tank out with a small amount of fuel to remove any debris. Pour fuel into a proper container.

14. Inspect rubber isolator, located between bottom of tank and rockshaft case, for excessive wear or damage. Replace if necessary.

15. Install fuel tank using cap screw, washer, and nut (A) on left fuel tank strap (D).

16. Install screw (B) and nut (C) on left fuel tank strap (D).

17. Repeat steps 15 and 16 for right fuel tank strap.



Left-Side Fuel Tank Strap

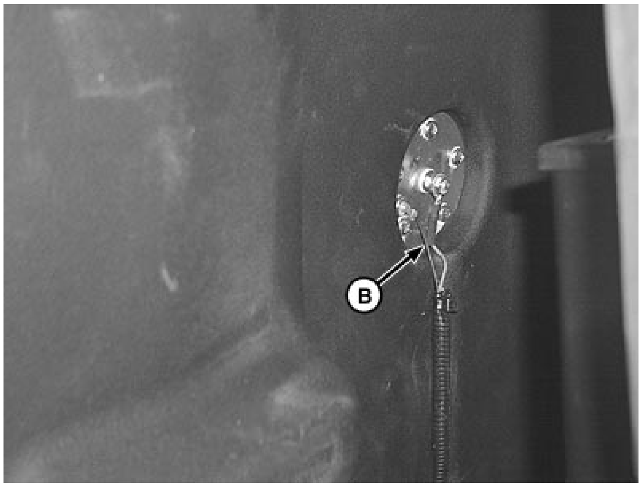
A—Cap Screw, Washer, and Nut
B—Screw
C—Nut
D—Strap

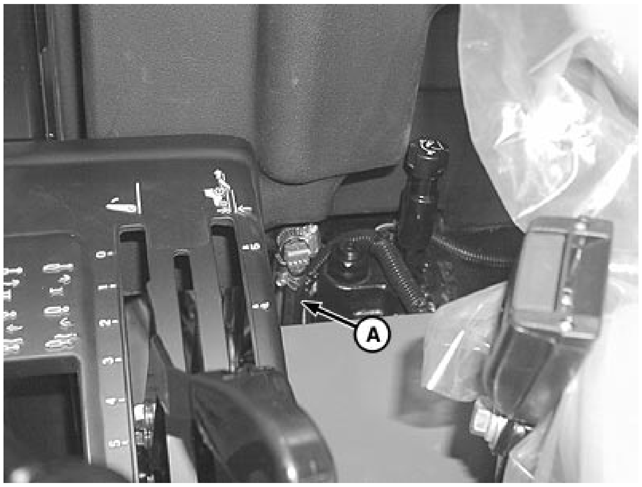
Continued on next page

18. Connect fuel level sender wiring leads (B). Connect orange wire to center post and black wire to outward post.

19. Connect fuel return hose (A).

A—Fuel Return Hose
B—Fuel Level Sender Wiring Lead (2 used)





Fuel Return Hose

OUO1083,00006B9 –19–11DEC06–4/5

30
05
5

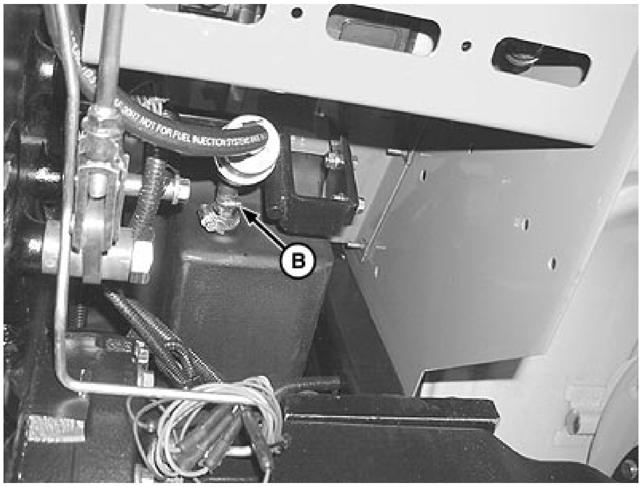
20. Connect fuel supply hose (B).

21. Fill fuel tank with proper fuel. (See Diesel Fuel in Section 10, Group 20.)

22. Connect battery cables, positive (+) cable first.

23. Bleed the fuel system. (See CTM104 or CTM301.)

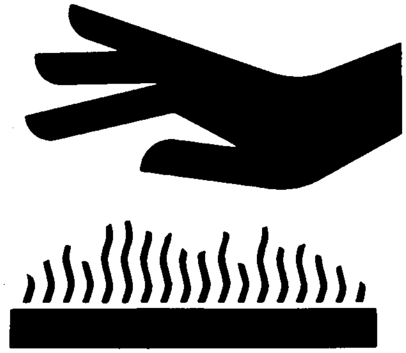
B—Fuel Supply Hose



Fuel Supply Hose

OUO1083,00006B9 –19–11DEC06–5/5

Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors



TS271 –UN–23AUG88

1. Park machine on a flat, level surface.

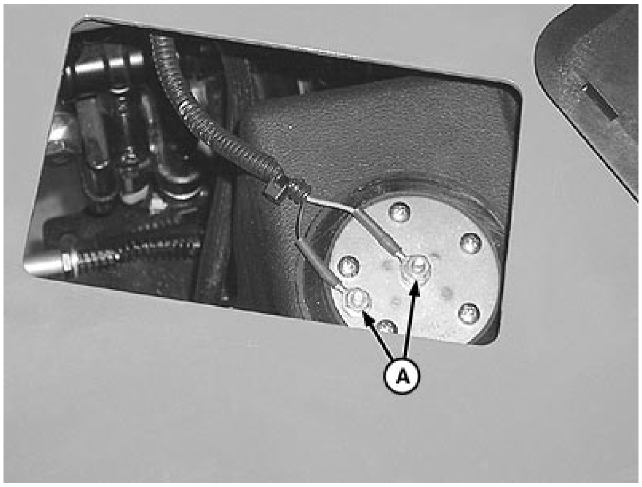
2. Disconnect battery, negative (—) cable first.

CAUTION: Exhaust may be hot. Allow exhaust to cool before removing. Hot exhaust can cause serious burns or fire.

3. Remove horizontal rear exhaust, if equipped.

Continued on next page

OUO1083,00006BA –19–11DEC06–1/9



NOTE: Isolated open operator station shown. Tractors with cab are similar.

NOTE: Tag the fuel level sender wires for ease of installation.

4. Remove access cover or plate located under floor mat. Disconnect fuel level sender wires (A).

NOTE: Fuel tank capacity for isolated open operator station and cab tractors is approximately 127 L (33.5 gal).

5. Remove fuel tank drain plug (B) and drain fuel into a proper container. (See Do Not Use Galvanized Containers in Section 10, Group 20.)

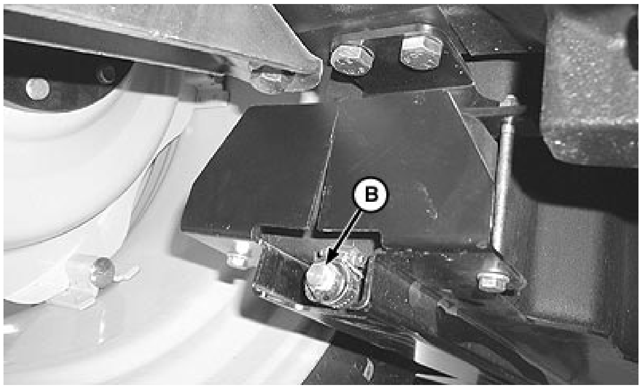
   Install drain plug when fuel tank is empty.

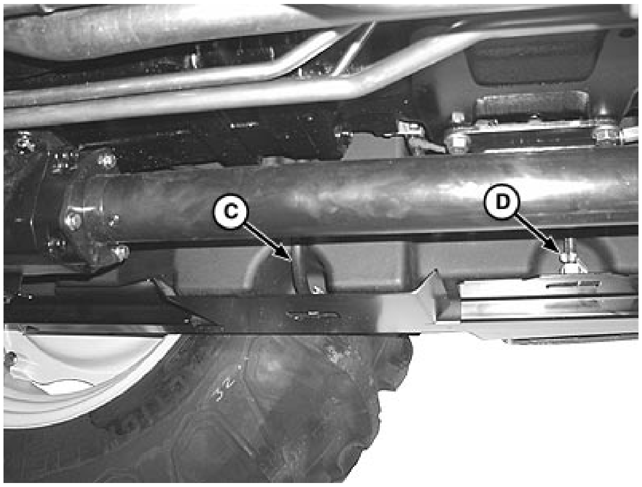
NOTE: Close all openings using caps and plugs to prevent contamination of fuel system.

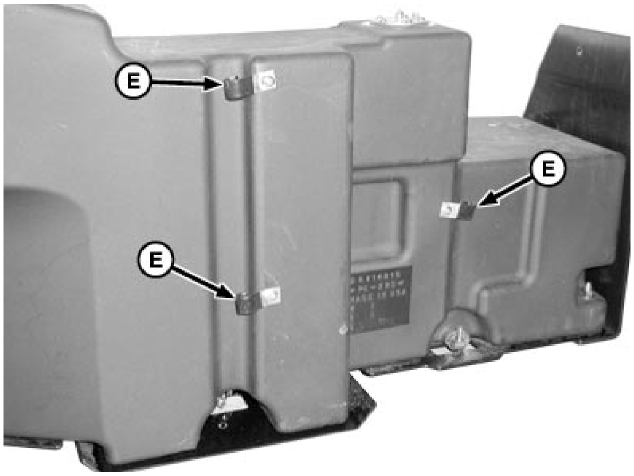
6. Disconnect fuel tank supply hose (C) and return hose (D).

NOTE: Fuel tank shown removed for clarity of photograph.

7. Remove hoses from fuel hose retainers (E) prior to removing tank from tractor.







Fuel Hose Retainers

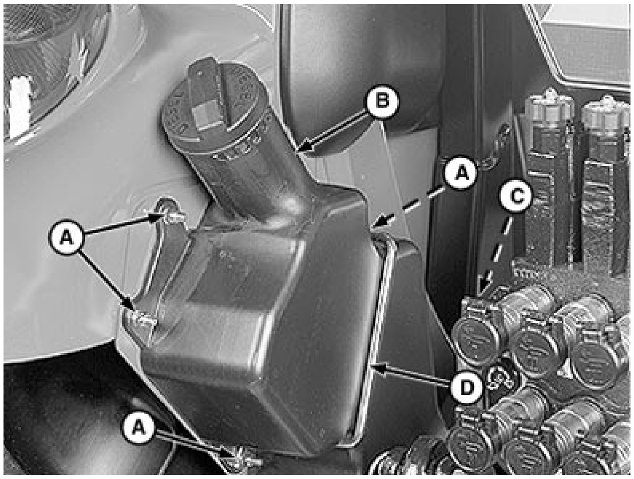
A—Fuel Sender Wires
B—Fuel Tank Drain Plug
C—Fuel Supply Hose
D—Fuel Return Hose
E—Fuel Hose Retainers

Continued on next page

8. Remove cap screws and nuts (A). Remove bracket (D).

9. Loosen hose clamp (C) and remove filler neck (B) from hose.

A—Cap Screw and Nut (4 used)
B—Filler Neck
C—Hose Clamp
D—Bracket



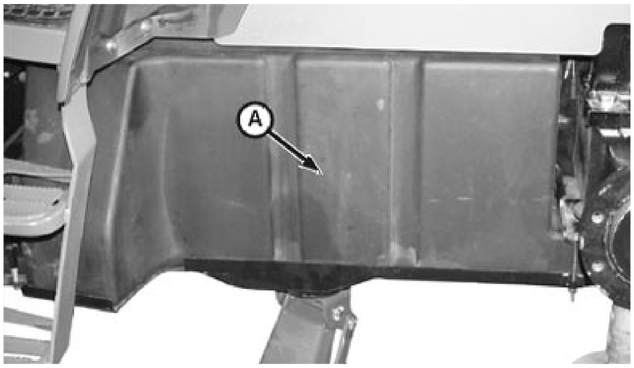
OUO1083,00006BA –19–11DEC06–3/9

NOTE: Left rear wheel removed only for illustration purposes.

Use a floor jack, positioned under the fuel tank, to aid during removal.

10. Use a floor jack to support fuel tank (A).

A—Fuel Tank



Continued on next page

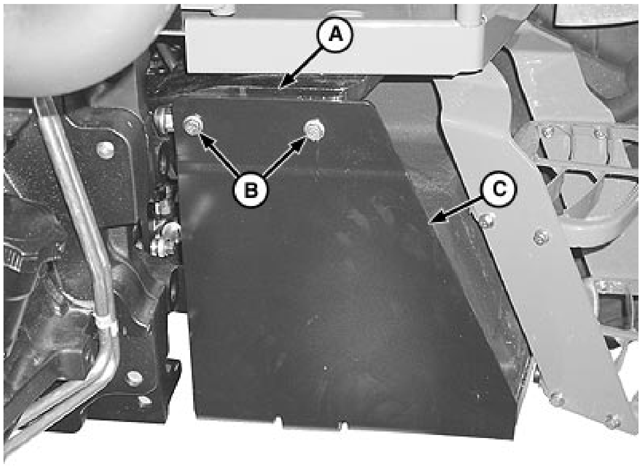
OUO1083,00006BA –19–11DEC06–4/9

11. Remove two cap screws (B) retaining front bracket (C) to upper bracket (A).

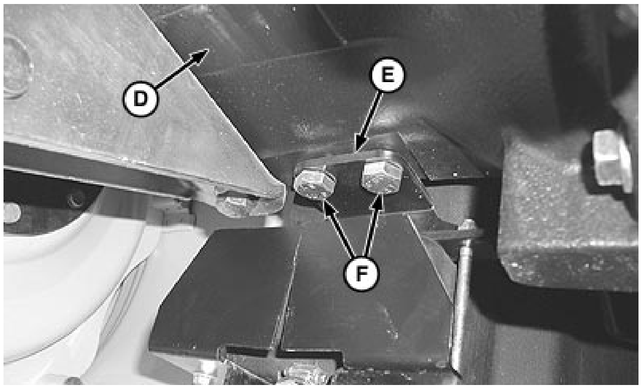
12. Remove two cap screws (F) retaining rear bracket (E) to left rear axle (D).

13. Lower fuel tank and remove from machine.

A—Upper Bracket
B—Cap Screw (2 used)
C—Front Bracket
D—Left Rear Axle
E—Rear Bracket
F—Cap Screw (2 used)



Fuel Tank Front Bracket



Fuel Tank Rear Bracket

Continued on next page

14. Remove two cap screws and lock nuts (D) and remove front bracket (C) from fuel tank (B) and support (E).

15. Remove two cap screws and lock nuts (F) and remove rear bracket (A).

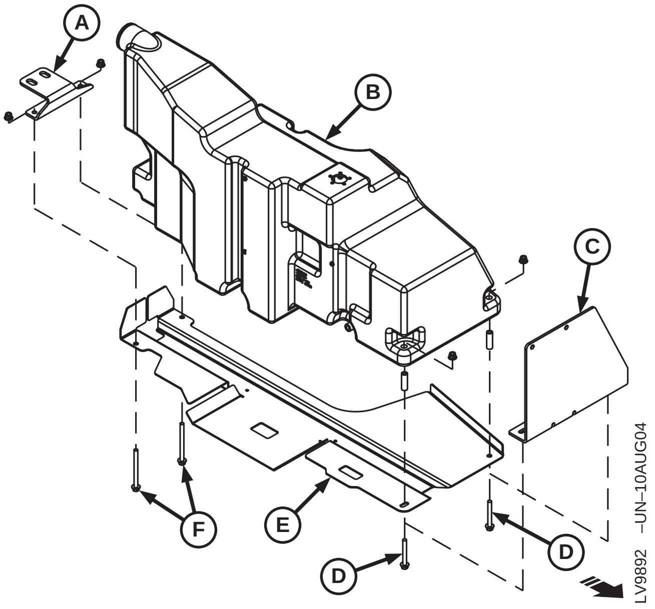
16. Remove fuel tank (B) from support (E). Inspect fuel tank for damage. Replace if necessary.

17. Clean fuel tank support. Wash fuel tank out with a small amount of fuel to remove any debris. Pour fuel into a proper container.

18. Install fuel tank on support.

19. Install rear bracket (A) using two cap screws and lock nuts (F).

20. Install front bracket (C) using two cap screws and lock nuts (D).



LV9892 –UN–10AUG04

A—Rear Bracket
B—Fuel Tank
C—Front Bracket
D—Cap Screw and Lock Nut (2 used)
E—Fuel Tank Support
F—Cap Screw and Lock Nut (2 used)

Continued on next page

OUO1083,00006BA –19–11DEC06–6/9

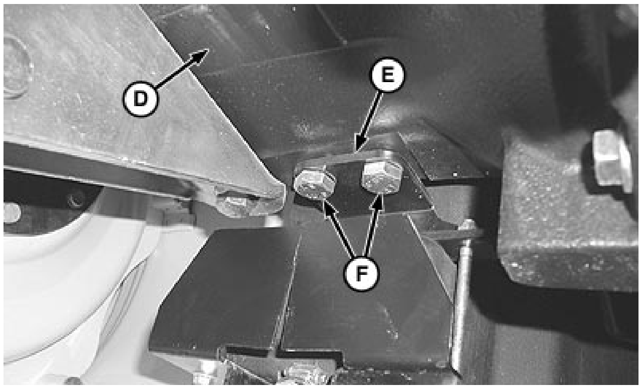
NOTE: Use a floor jack, positioned under center of fuel tank, to aid during installation.

21. Raise fuel tank into position. Attach rear bracket (E) to left rear axle (D) using two cap screws (F). Tighten cap screws (F) to specification.

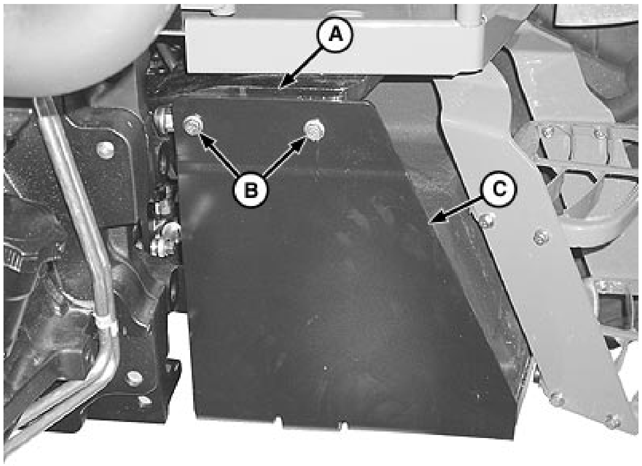
Specification	
Fuel Tank Rear Bracket Cap Screws—Torque	350 N•m (255 lb-ft)

22. Attach front bracket (C) to upper bracket (A) using two cap screws (B). Tighten cap screws to specification.

Specification	
Fuel Tank Front Bracket Cap Screws—Torque	80 N•m (60 lb-ft)



LV8649 –UN–18AUG03



LV9891 –UN–10AUG04

A—Upper Bracket
B—Cap Screw (2 used)
C—Front Bracket
D—Left Rear Axle
E—Rear Bracket
F—Cap Screw (2 used)

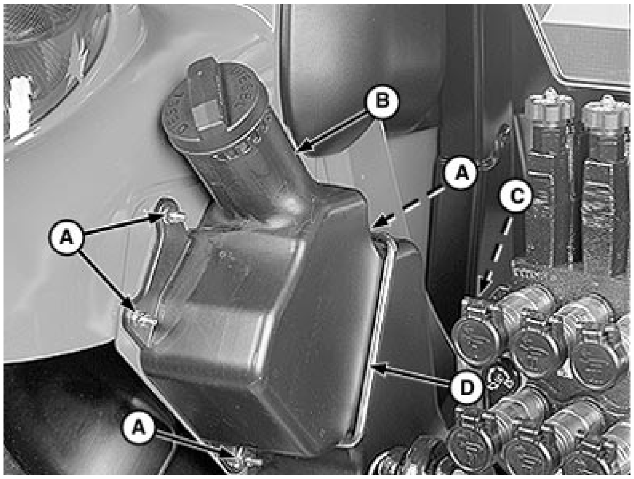
OUO1083,00006BA –19–11DEC06–7/9

23. Install hose clamp (C) on fuel filler hose.

NOTE: Ensure wiring harness is routed above filler hose.

24. Install filler neck (B) in fuel filler hose and tighten hose clamp (C).

25. Install bracket (D) using four cap screws and nuts (A).

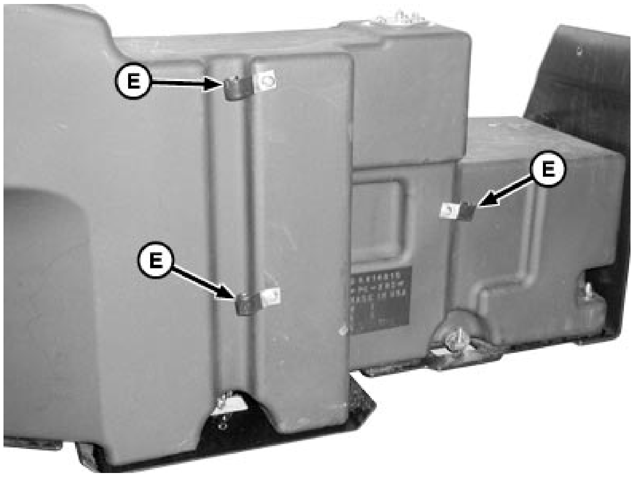


LV11693 –UN–18NOV04

A—Cap Screw and Nut (4 used)
B—Filler Neck
C—Hose Clamp
D—Bracket

Continued on next page

OUO1083,00006BA –19–11DEC06–8/9



Fuel Hose Retainers

NOTE: Fuel tank shown removed for clearity of photograph.

26. Route fuel hoses through retainers (E) as tank is installed.

27. Connect fuel return hose (D) and fuel supply hose (C) to fuel tank.

28. Make sure fuel tank drain plug (B) is installed and tightened.

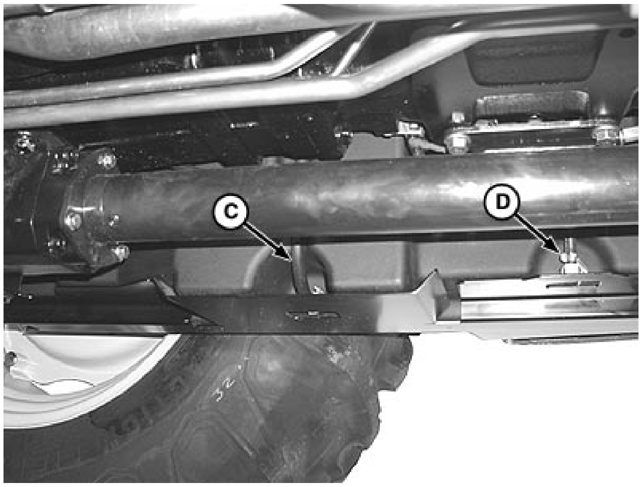
29. Connect fuel level sender wires (A). Connect orange wire to center post and black wire to outward post. Install floor access cover or plate and rubber floor mat.

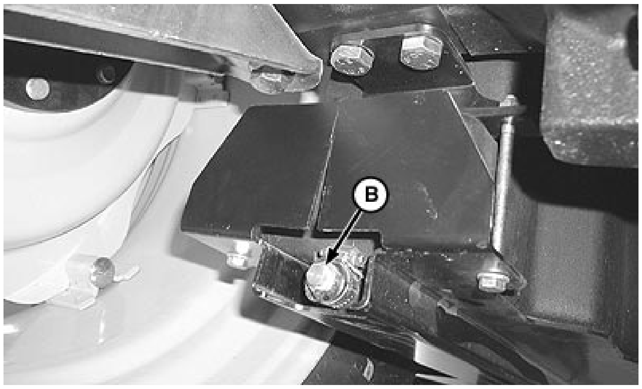
30. Install horizontal rear exhaust, if equipped.

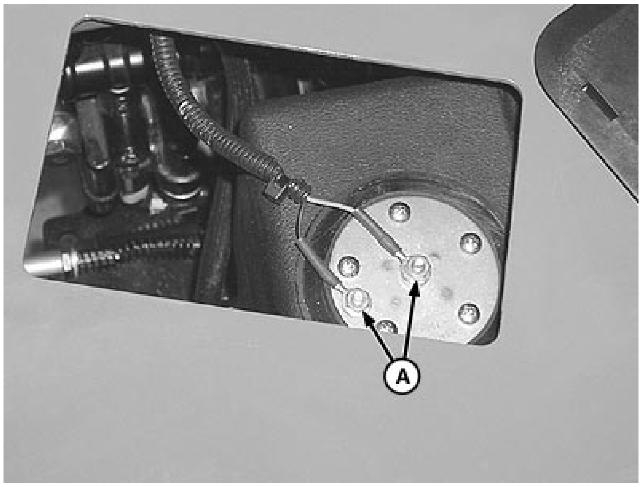
31. Fill fuel tank with proper fuel. (See Diesel Fuel in Section 10, Group 20.)

32. Connect battery cables, positive (+) battery cable first.

33. Bleed the fuel system. (See CTM104 or CTM301.)







A—Fuel Sender Wires
B—Fuel Tank Drain Plug
C—Fuel Supply Hose
D—Fuel Return Hose
E—Fuel Hose Retainers

OUO1083,00006BA –19–11DEC06–9/9

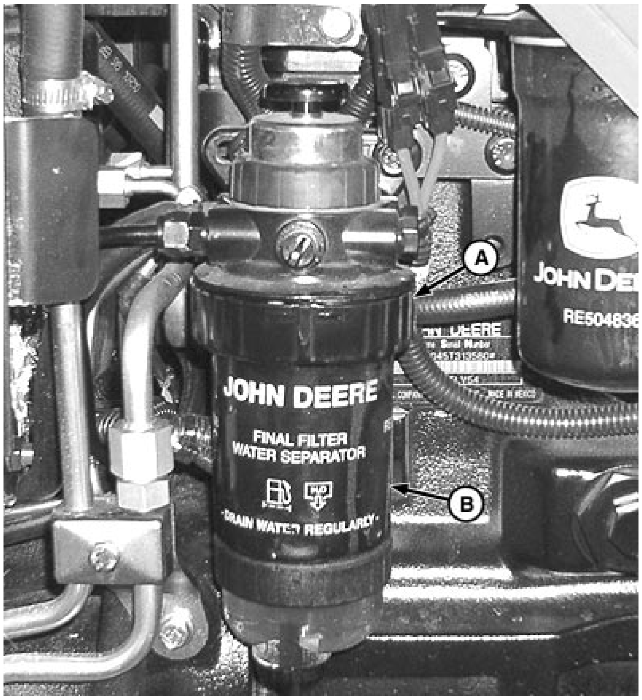
Replace Fuel Filter/Water Separator—4-Cylinder Engines

1. Loosen retaining ring (A).
2. Remove filter (B).

IMPORTANT: Fill new filter with clean fuel before installing.

3. Index and install new filter.
4. Tighten retaining ring.
5. Bleed the fuel system. (See CTM104.)

A—Retaining Ring
B—Filter


A
B
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
DRAIN WATER REGULARLY
JOHN DEERE
RE504836
LV9896 –UN–10AUG04

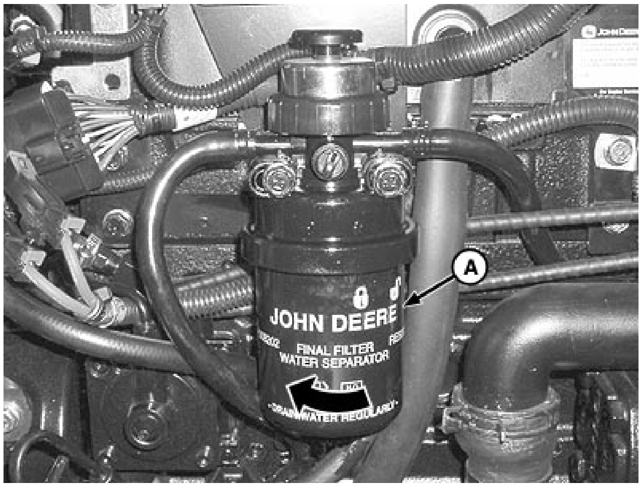
Fuel Filter/Water Separator—4-Cylinder Engines

Replace Fuel Filter/Water Separator—5-Cylinder Engines

1. Rotate filter cartridge (A) 1/4-turn counterclockwise.
2. Pull down on filter cartridge to remove.

IMPORTANT: Fill new filter with clean fuel before installing.

3. Index and install new filter cartridge.
4. Rotate 1/4-turn clockwise.
5. Bleed the fuel system. (See CTM301.)


A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
DRAIN WATER REGULARLY
LV9895 –UN–10AUG04

Fuel Filter/Water Separator—5-Cylinder Engines

A—Fuel Filter Cartridge

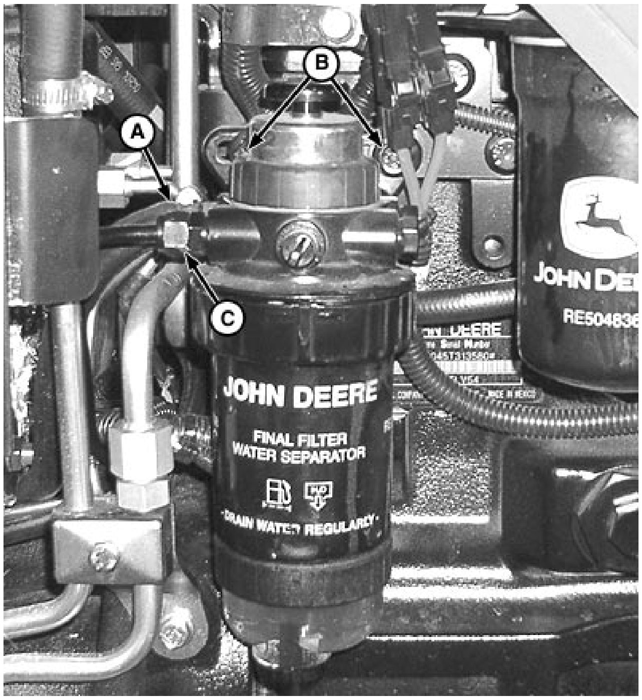
Remove and Install Fuel Filter/Primer Pump Assembly

1. Disconnect fuel lines (A and C). Close all openings using caps and plugs.
2. Remove cap screws (B), lock washers, and flat washers. Remove fuel filter/primer pump assembly.

IMPORTANT: Fill new filter/primer pump assembly with clean fuel before installing.

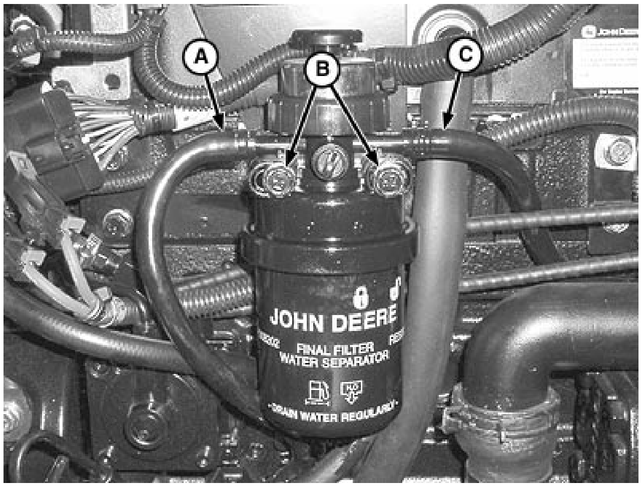
3. Install fuel filter/primer pump assembly.
4. Connect fuel lines (A and C).
5. Bleed fuel system. (See CTM104 or CTM301.)

A—Fuel Line
B—Cap Screw (2 used)
C—Fuel Line


A
B
C
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
DRAIN WATER REGULARLY
JOHN DEERE
RE504836

LV9900 –UN–10AUG04

Fuel Filter/Water Separator/Primer Pump—4-Cylinder Engines

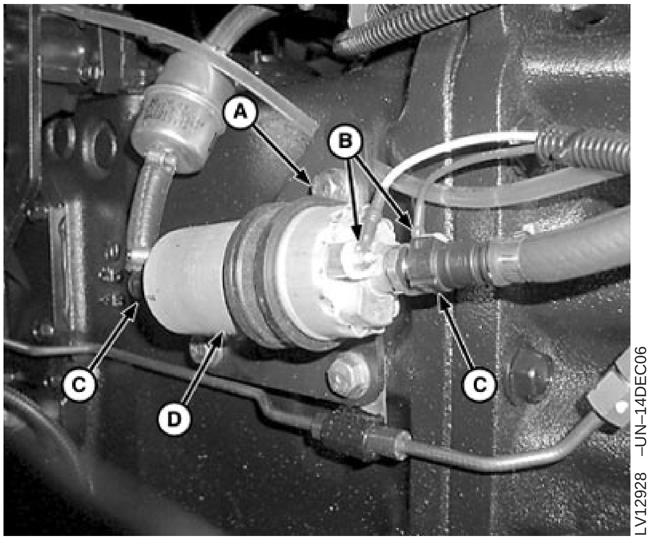

A
B
C
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
DRAIN WATER REGULARLY

LV9901 –UN–10AUG04

Fuel Filter/Water Separator/Primer Pump—5-Cylinder Engines

OUO1083,00006BC –19–11DEC06–1/1

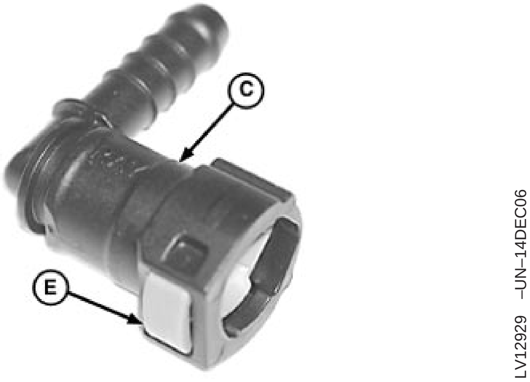
Replace Fuel Transfer Pump—5603 and 5625



1. Park machine on a flat, level surface.
2. Disconnect battery, negative (—) cable first.

NOTE: Tag or label wire leads to feul transfer pump to aid during installation.

3. Disconnect wire leads (B). Tag or label wire leads to aid during installation.
4. Disconnect fuel hose fittings (C) from fuel transfer pump (D) by pushing inward on release tab (E).
5. Remove cap screw (A) and replace fuel transfer pump (D).
6. Install new pump (D) and tighten cap screw (A) securely.
7. Connect hose fittings (C) to pump.
8. Connect wire leads (B) to pump.



A—Cap Screw
B—Wire Leads
C—Fuel Hose Fitting (2 used)
D—Fuel Transfer Pump
E—Release tab

OUO1023,0002A74 –19–18DEC06–1/1

Group 10
Air Intake System

Turbocharger Repair—Use CTM104 or CTM301

TS225 –UN–17JAN89

For complete repair information the component technical manual (CTM) is also required. Use the component manual in conjunction with this machine manual.

- 5-cylinder 3.0 L engines—Use CTM301
- 4-cylinder 4.5 L engines—Use CTM104

OUO1082,00002C2 –19–11DEC06–1/1

Specifications

Item	Measurement	Specification
Turbocharger Oil Drain Line—4-Cylinder	Torque	24 N•m (18 lb-ft)
Turbocharger Oil Inlet Line—4-Cylinder	Torque	24 N•m (18 lb-ft)
Turbocharger Mounting Cap Screws—4-Cylinder	Torque	70 N•m (52 lb-ft)
Turbocharger Mounting Cap Screws—5-Cylinder	Torque	32 N•m (22 lb-ft)
Turbocharger Oil Drain Line—5-Cylinder	Torque	36 N•m (26 lb-ft)
Turbocharger Oil Inlet Line—5-Cylinder	Torque	19 N•m (14 lb-ft)

JG31785,0000099 –19–11DEC06–1/1

Other Material

Number	Name	Use
PT569 (U.S.) TY6332 (Canadian) NA (LOCTITE®)	NEVER-SEEZ® Anti-Seize Lubricant	Apply to threads of turbocharger mounting cap screws.

LOCTITE is a trademark of Loctite Corp.
NEVER-SEEZ is a trademark of Emhart Chemical Group

JG31785,00003D0 –19–11DEC06–1/1

Remove, Inspect, and Install Air Cleaner Elements

1. Open hood.

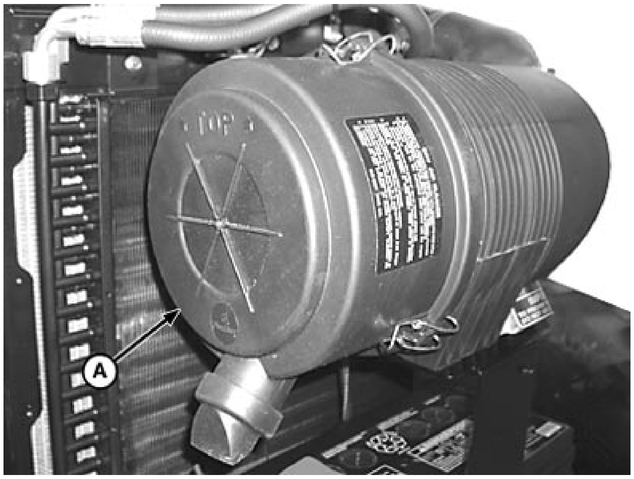
2. Release three air cleaner cover retaining clips, and remove air cleaner cover (A).

3. Turn primary element (B) counterclockwise to remove.

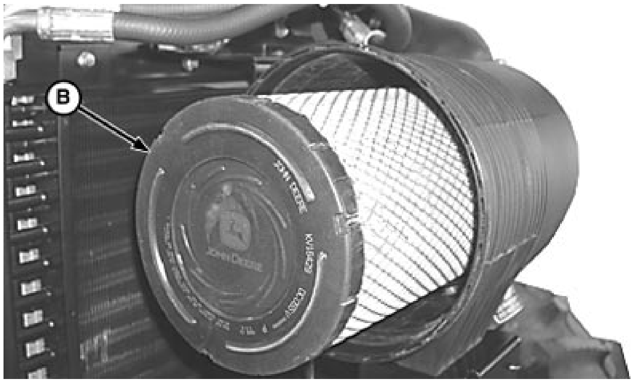
IMPORTANT: Remove secondary element (C) only if replacement is necessary. Do not attempt to clean secondary element. Install new element immediately to prevent dust from entering air intake system. Dust can damage internal engine components and turbocharger.

4. Replace secondary element (C) if dirty or damaged.

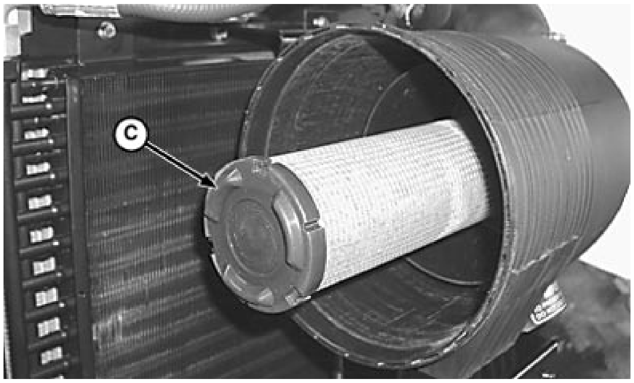
A—Air Cleaner Cover
B—Primary Element
C—Secondary Element



LV12655 –UN–25APR05



LV12637 –UN–25APR05



LV12638 –UN–25APR05

Continued on next page

OUO1023,0002A76 –19–12DEC06–1/2

CAUTION: Prevent possible injury from flying chips if compressed air is more than 210 kPa (2.1 bar) (30 psi). Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.

IMPORTANT: DO NOT attempt to clean the filter element with water or cleaning solution.

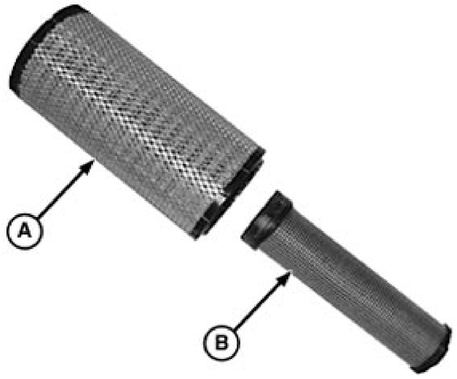
5. To remove debris from primary element use compressed air. Direct air up and down the pleats, blowing from inside to outside. Be careful not to damage the element.

6. To inspect the element, hold a bright light inside elements (A or B) and check carefully for holes. Discard any element which shows the slightest hole.

7. Inspect rubber sealing surfaces on both ends are in good condition. If damaged , replace element

8. Clean inside of air cleaner housing and unloader valve with a damp cloth. Wipe seal clean and install primary element.

9. Install air cleaner cover. Fasten three cover retaining clips.

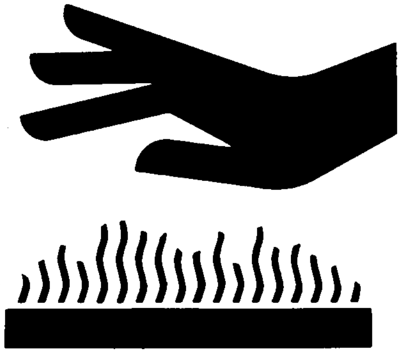


LV12635 –UN–25APR05

A—Primary Element
B—Secondary Element

OUO1023,0002A76 –19–12DEC06–2/2

Remove Turbocharger—4-Cylinder Tractors



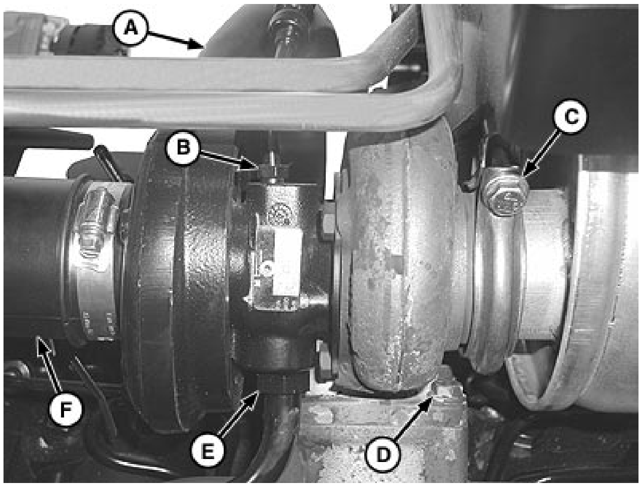
CAUTION: Turbocharger may be hot. Allow turbocharger to cool before removal. Hot turbocharger can cause serious burns.

IMPORTANT: Do not clean exterior of turbocharger if inspection is required. Cleaning can remove evidence for failure analysis.

1. Remove hood.

NOTE: Close all openings using caps and plugs to prevent contamination.

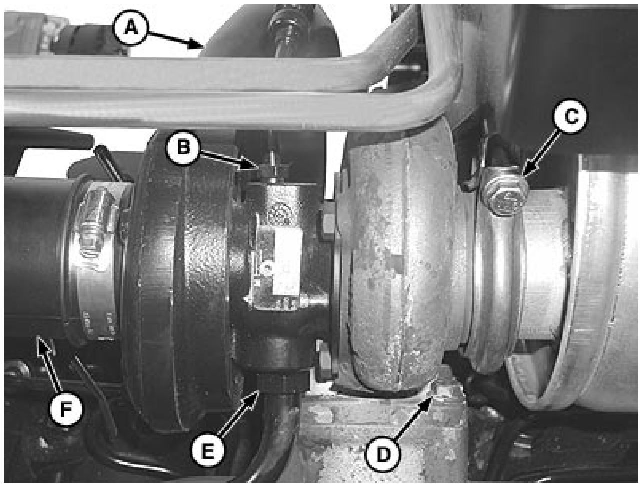
2. Disconnect air intake hose (A).
3. Remove oil inlet line (B).
4. Remove muffler clamp (C), oil drain line (E), and air intake tube (F).
5. Remove four cap screws (D).
6. Remove turbocharger and gasket. Close all openings using caps and plugs.
7. Make repairs as necessary. (See CTM104.)



A—Air Intake Hose
B—Oil Inlet Line
C—Muffler Clamp
D—Cap Screw (4 used)
E—Oil Drain Line
F—Air Intake Tube

OUO1032,00000FC –19–11DEC06–1/1

Install Turbocharger—4-Cylinder Tractors



A—Air Intake Hose
B—Oil Inlet Line
C—Muffler Clamp
D—Cap Screw (4 used)
E—Oil Drain Line
F—Air Intake Tube

NOTE: Exhaust stack removed for illustration purposes.

1. Install new gasket and turbocharger on intake manifold.

2. Install muffler clamp (C) on muffler flange. Do not tighten.

3. Install four cap screws (D). Leave cap screws loose.

4. Connect oil drain line (E). Tighten to specification.

Specification	
Turbocharger Oil Drain Line—4-Cylinder—Torque	24 N•m (18 lb-ft)

5. Fill oil line inlet port with clean engine oil. Rotate turbine wheel by hand to lubricate bearings.

6. Connect oil inlet line (B). Tighten to specification.

Specification	
Turbocharger Oil Inlet Line—4-Cylinder—Torque	24 N•m (18 lb-ft)

7. Tighten cap screw in muffler clamp (C).

8. Tighten cap screws (D) to specifications.

Specification	
Turbocharger Mounting Cap Screws—4-Cylinder—Torque	70 N•m (52 lb-ft)

IMPORTANT: With the greatest suction force occurring between air cleaner and turbocharger, ensure that tube connections are tight to prevent entry of dirt into the system.

9. Connect air intake hose (A).

10. Connect air intake tube (F).

11. Perform turbocharger break-in. (See Turbocharger Break-In in Section 30, Group 05.)

12. Install hood.

OUO1032,00000FD –19–11DEC06–1/1

Remove Turbocharger—5-Cylinder Tractors

CAUTION: Turbocharger may be hot. Allow turbocharger to cool before removal. Hot turbocharger can cause serious burns.

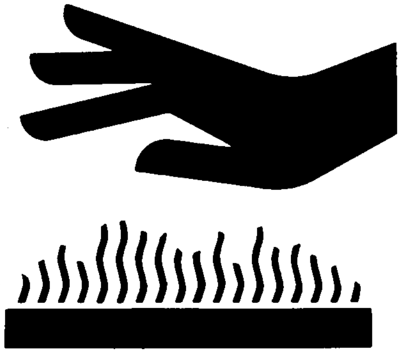
IMPORTANT: Do not clean exterior of turbocharger if inspection is required. Cleaning can remove evidence for failure analysis.

1. Remove hood.

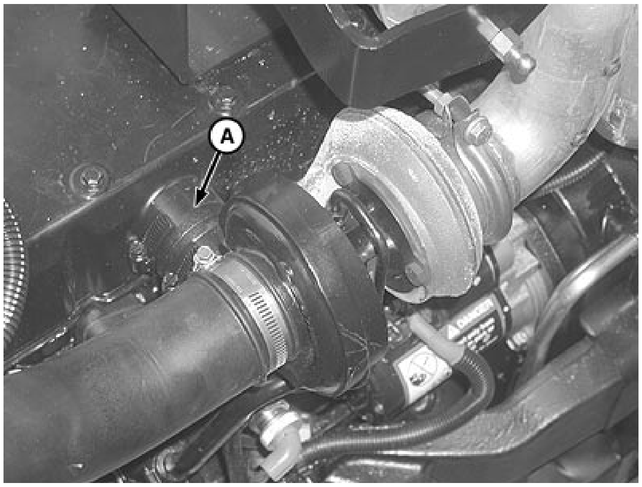
NOTE: Close all openings using caps and plugs to prevent contamination.

2. Loosen air intake hose (A).
3. Remove air intake pipe (F).
4. Disconnect oil inlet line (B), muffler clamp (C), and oil drain line (E).
5. Remove cap screws (D).
6. Remove turbocharger and gasket. Close all openings using caps and plugs.
7. Make repairs as necessary. (See CTM301.)

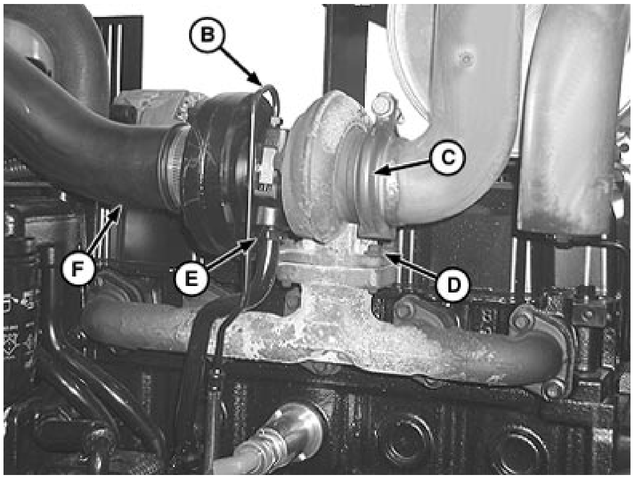
A—Air Intake Hose
B—Oil Inlet Line
C—Muffler Clamp
D—Cap Screw (4 used)
E—Oil Drain Line
F—Air Intake Pipe



TS271 –UN–23AUG88



LV9870 –UN–29JUL04



LV9869 –UN–10AUG04

OUO1032,00000FE –19–11DEC06–1/1

Install Turbocharger—5-Cylinder Tractors

1. Install muffler clamp (C) on muffler flange. Do not tighten.

2. Install new gasket and turbocharger on intake manifold.

3. Apply Never-Seez PT569 to the threads of cap screws (D), and install. Tighten to specification.

Specification

Turbocharger Mounting Cap Screws—5-Cylinder—Torque .... 32 N•m (22 lb-ft)

4. Connect oil drain line (E). Tighten to specification.

Specification

Turbocharger Oil Drain Line—5-Cylinder—Torque .... 36 N•m (26 lb-ft)

IMPORTANT: With the greatest suction force occurring between air cleaner and turbocharger, ensure that pipe connections are tight to prevent entry of dirt into the system.

5. Tighten muffler clamp (C), and install air intake pipe (F).

6. Fill turbocharger with clean engine oil through oil inlet opening. Rotate turbine wheel by hand to lubricate bearings.

7. Connect oil inlet line (B). Tighten to specification.

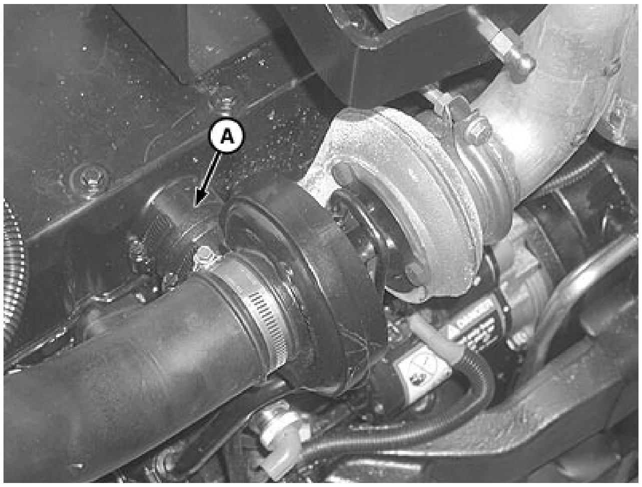
Specification

Turbocharger Oil Inlet Line—5-Cylinder—Torque .... 19 N•m (14 lb-ft)

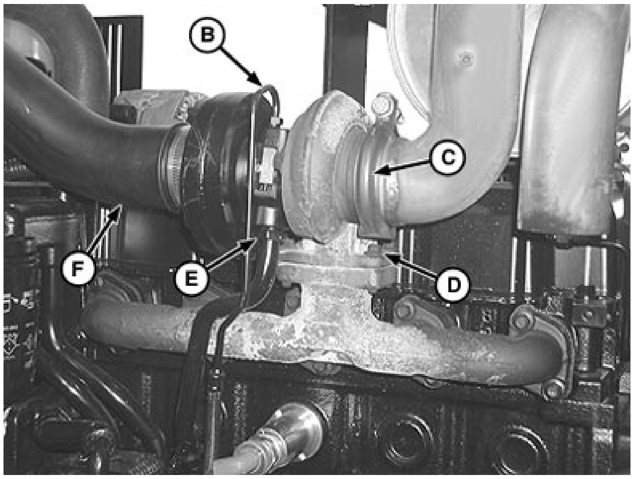
8. Tighten air intake hose clamps (A).

9. Perform turbocharger break-in. (See Turbocharger Break-In in Section 30, Group 10.)

10. Install hood.



LV9870 –UN–29JUL04



LV9869 –UN–10AUG04

A—Air Intake Hose
B—Oil Inlet Line
C—Muffler Clamp
D—Cap Screw (4 used)
E—Oil Drain Line
F—Air Intake Pipe

OUO1032,00000FF –19–11DEC06–1/1

Turbocharger Break-In

IMPORTANT: A new or repaired turbocharger does not have an adequate oil supply for initial start-up of engine. Perform the steps below to prevent damage to turbocharger bearings.

1. 4-Cylinder Engines: Disconnect wire lead (A) from fuel shut-off solenoid at injection pump.

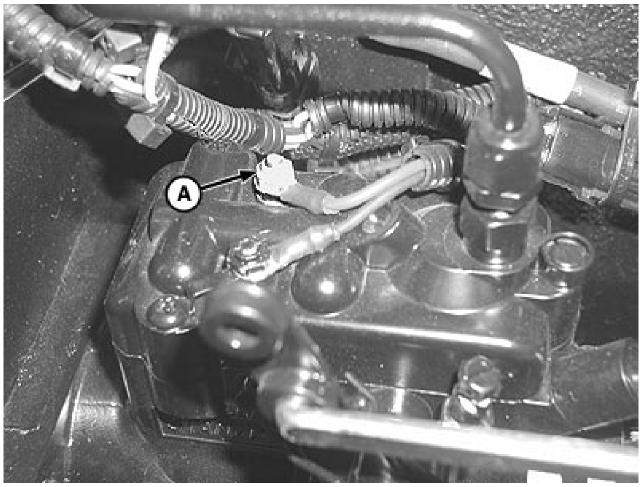
2. 5-Cylinder Engines: Disconnect fuel shut-off solenoid at wire connector (B).

3. Crank engine over with starting motor for 10 seconds. DO NOT crank engine longer than 30 seconds at a time to avoid damage to starting motor.

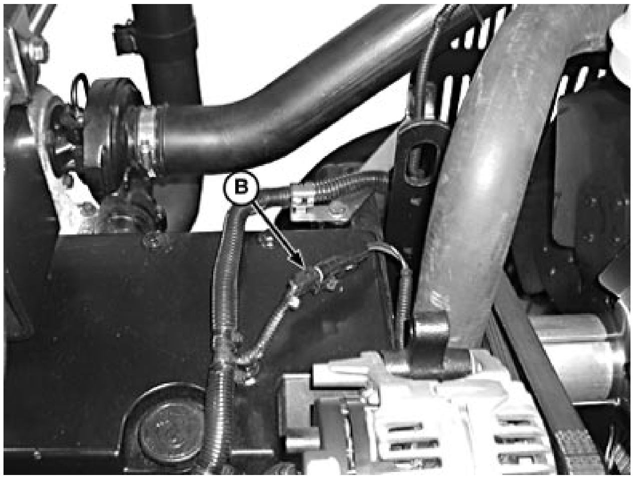
4. 4-Cylinder Engines: Connect wire lead (A) to fuel shut-off solenoid at injection pump.

5. 5-Cylinder Engines: Connect fuel shut-off solenoid at wire connector (B).

A—Wire Lead
B—Wire Connector



4-Cylinder Engine

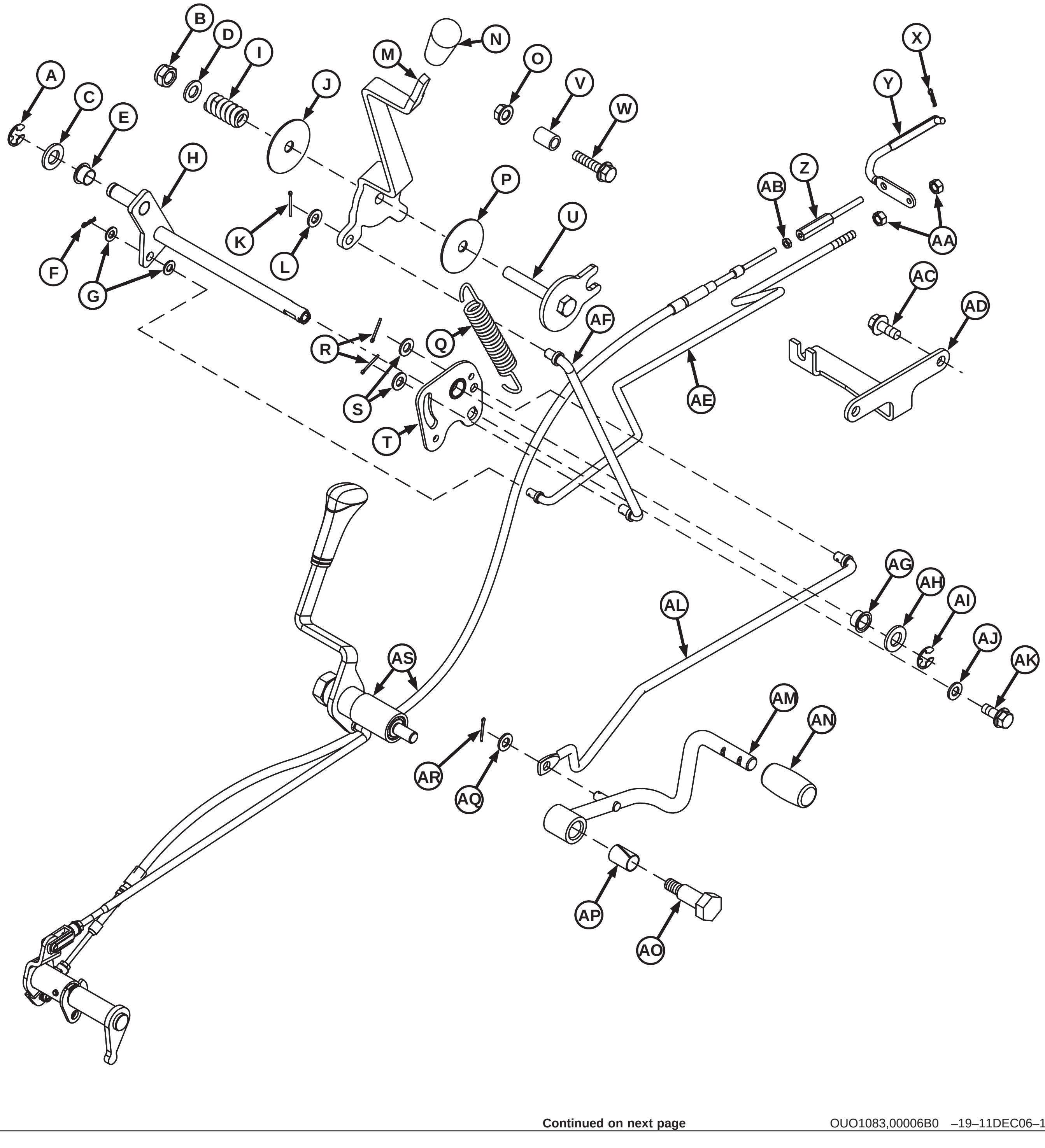


5-Cylinder Engine

OUO1032,0000100 –19–11DEC06–1/1

Group 15
Speed Control Linkage

Inspect and Repair Speed Control Linkage—4-Cylinder Engine—Straddle Mount


B
D
I
M
N
X
A
J
O
C
V
Y
E
W
H
Z
AB
P
U
AA
K
F
L
G
AC
AD
AF
R
Q
AE
S
T
AG
AH
AL
AI
AJ
AS
AK
AM
AN
AR
AQ
AP
AO
LV12370 –UN–07MAR05

Continued on next page

Speed Control Linkage

A—E-Clip
B—Lock Nut
C—Washer
D—Washer
E—Plastic Bushing
F—Spring Locking Pin
G—Washer (2 used)
H—Rod
I—Spring
J—Washer
K—Cotter Pin
L—Washer
M—Lever
N—Knob
O—Flange Nut
P—Washer
Q—Extension Spring
R—Cotter Pin (2 used)
S—Washer (2 used)
T—Plate
U—Plate
V—Bushing
W—Cap Screw
X—Spring Locking Pin
Y—Link
Z—Guide
AA—Nut (2 used)
AB—Jam Nut
AC—Cap Screw
AD—Bracket
AE—Rod
AF—Rod
AG—Plastic Bushing
AH—Washer
AI—E-Clip
AJ—Washer
AK—Cap Screw
AL—Rod
AM—Pedal
AN—Knob
AO—Shoulder Cap Screw
AP—Plastic Bushing
AQ—Washer
AR—Cotter Pin
AS—Lever and Cable (540/540E PTO)

1. Open hood.

2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

3. Inspect parts for wear and damage. Replace as necessary.

4. Adjust throttle lever. (See Reference 220-15-002, Throttle Lever Adjustment—Straddle Mount Tractors in TM2197 Section 220, Group 15.)

5. If equipped, adjust 540/540E PTO lever and linkage adjustment. (SeeReference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)

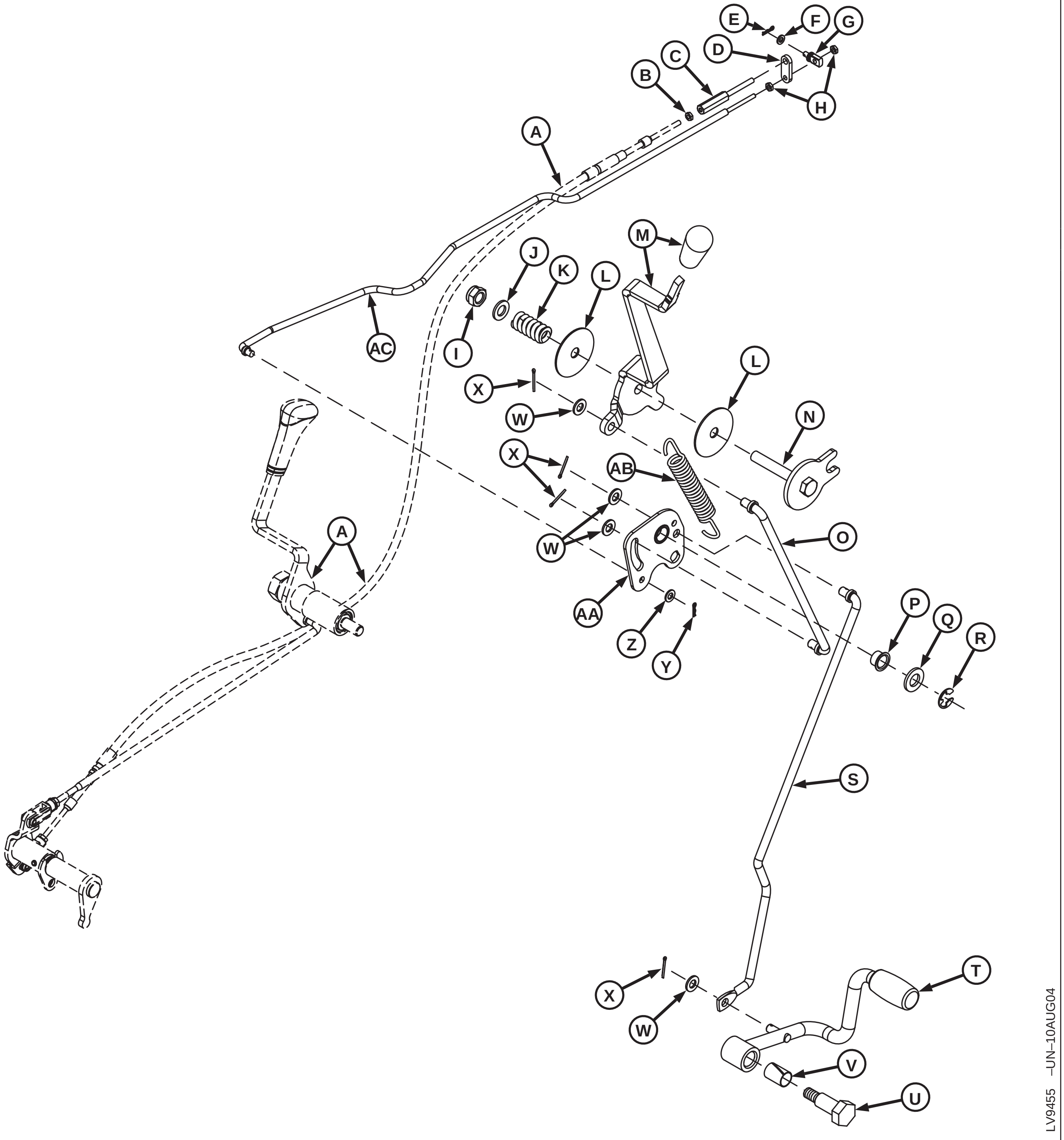
6. Adjust fast and slow idle. (See CTM104.)

7. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

8. Close hood.

OUO1083,00006B0 –19–11DEC06–2/2

Inspect and Repair Speed Control Linkage—5-Cylinder Engine—Straddle Mount

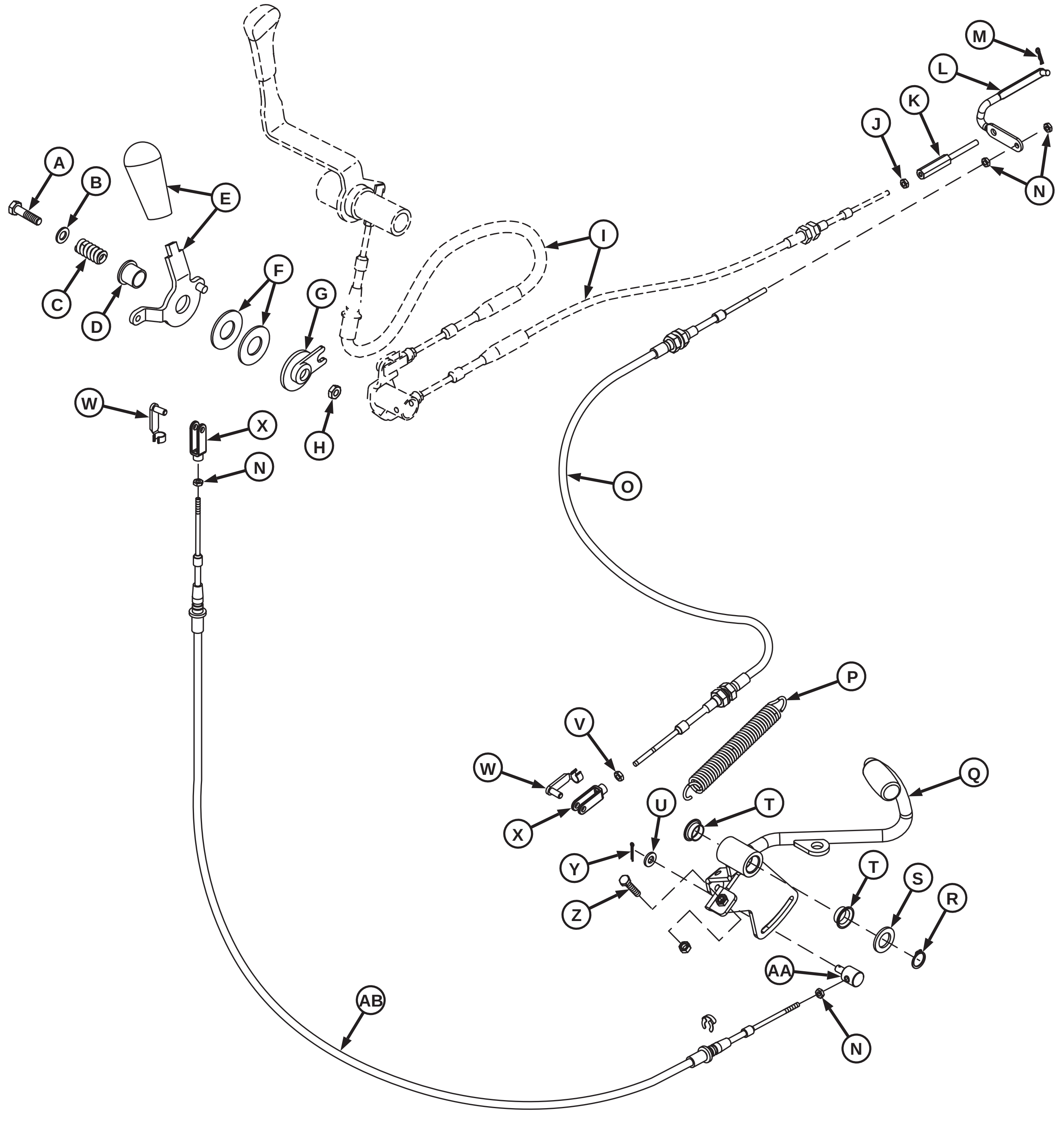

E
F
G
D
C
B
H
A
M
J
K
L
AC
I
L
X
W
N
X
AB
W
A
O
AA
P
Q
R
Z
Y
S
T
X
W
V
U
LV9455 –UN–10AUG04

Continued on next page OUO1083,00006B1 –19–11DEC06–1/2

A—Lever and Cable (540/540E PTO)
B—Jam Nut (540/540E PTO)
C—Guide (540/540E PTO)
D—Plate (540/540E PTO)
E—Cotter Pin
F—Washer
G—Swivel
H—Nut (2 used)
I—Lock Nut
J—Washer
K—Tension Spring
L—Washer (2 used)
M—Throttle Lever and Knob
N—Plate
O—Linkage Rod
P—Bushing
Q—Washer
R—E-Ring
S—Linkage Rod
T—Foot Throttle Lever
U—Shoulder Bolt
V—Bushing
W—Washer
X—Cotter Pin
Y—Spring Pin
Z—Washer
AA—Arm
AB—Spring
AC—Linkage Rod

1. Open hood.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Inspect parts for wear and damage. Replace as necessary.
4. Adjust throttle lever. (See Reference 220-15-002, Throttle Lever Adjustment—Straddle Mount Tractors in TM2197 Section 220, Group 15.)
5. If equipped, adjust 540/540E PTO lever and linkage adjustment. (See Reference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)
6. Adjust fast and slow idle. (See CTM301.)
7. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
8. Close hood.

Inspect and Repair Speed Control Linkage—5425, 5525 and 5625—Isolated Open Operator Station and Cab Tractors


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB

LV9452 –UN–10AUG04

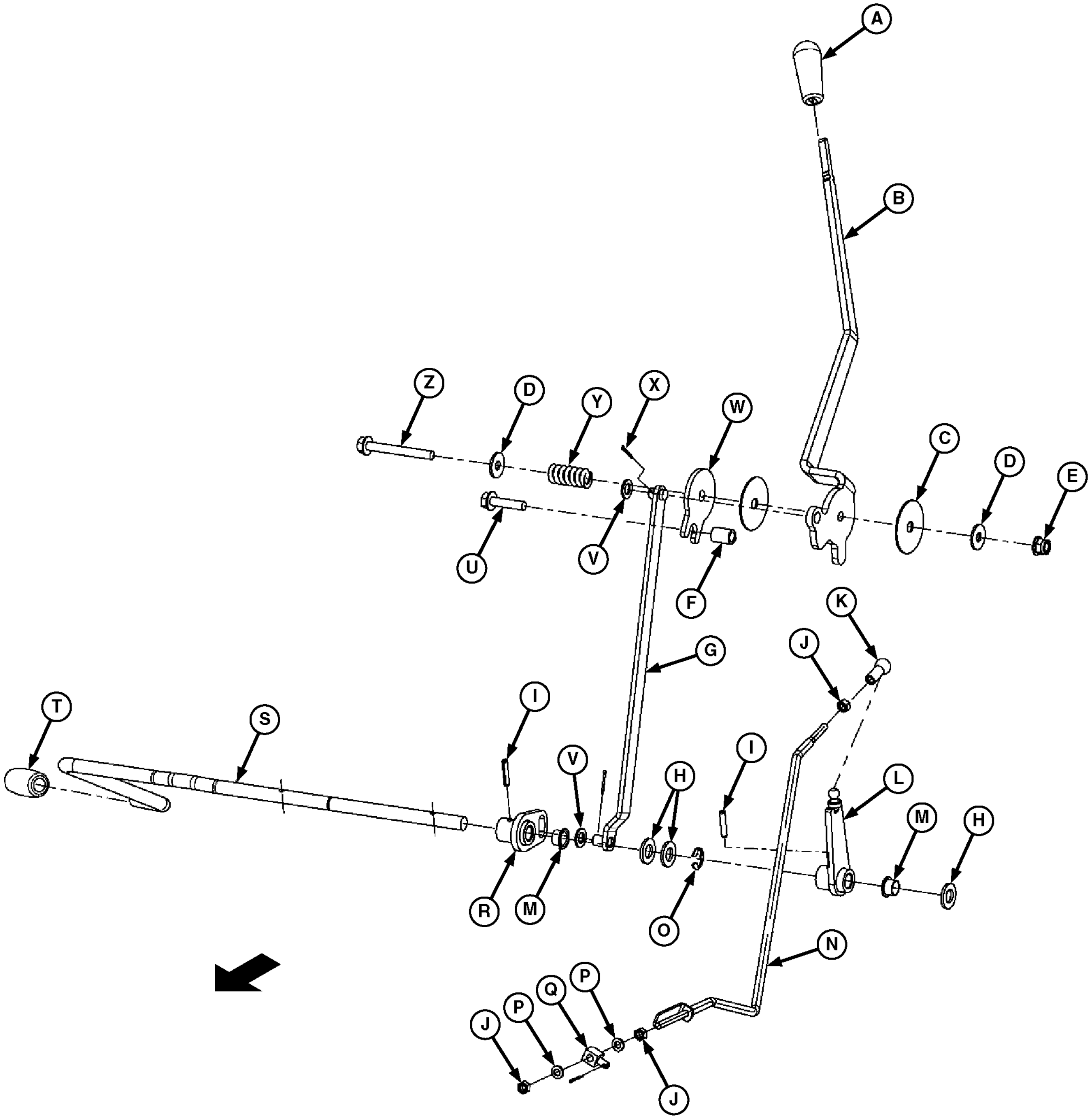
Continued on next page

A—Cap Screw
B—Washer
C—Tension Spring
D—Round Retainer
E—Throttle Lever and Knob
F—Washer (2 used)
G—Plate
H—Nut
I—Lever and Cable (540/540E PTO)
J—Jam Nut (540/540E PTO)
K—Guide (540/540E PTO)
L—Link
M—Cotter Pin
N—Nut (2 used)
O—Throttle Cable
P—Spring
Q—Foot Throttle Lever
R—Snap Ring
S—Washer
T—Bushing (2 used)
U—Washer
V—Jam Nut
W—Spring Locking Pin (2 used)
X—Yoke (2 used)
Y—Cotter Pin
Z—Cap Screw, Pedal Stop
AA—Swivel
AB—Throttle Cable

1. Open hood.
2. Remove control knobs from right controls.
3. Remove right control panel cover.
4. Remove control knobs from PTO and 540/540E PTO levers.
5. Remove cover from PTO controls.
6. Inspect parts for wear or damage. Replace as necessary.
7. Adjust throttle lever. (See Reference 220-15-003, Throttle Lever Adjustment—Isolated Open Operator Station and Cab Tractors in TM2197 Section 220, Group 15.)
8. Adjust foot throttle pedal stop. (See Reference 220-15-004, Foot Throttle Pedal Stop Adjustment—Isolated Open Operator Station and Cab Tractors in TM2197 Section 220, Group 15.)
9. Adjust fast and slow idle. (See CTM104.)
10. If equipped, adjust 540/540E PTO lever and linkage adjustment. (SeeReference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)
11. Install cover over PTO controls.
12. Install control knobs on PTO levers.
13. Install right control panel.
14. Install control knobs on right control levers.
15. Close hood.

OUO1083,00006B2 –19–11DEC06–2/2

Inspect and Repair Speed Control Linkage—5603—Cab Tractor


A
B
Z
D
Y
X
W
C
D
E
U
V
F
K
G
J
T
S
I
V
I
H
L
M
H
R
M
O
N
P
Q
J
P
J

LV12849 –UN–09NOV06

Continued on next page

OUO1023,0002A28 –19–11DEC06–1/2

A—Knob
B—Hand Speed Control Lever
C—Washer (2 used)
D—Washer (2 used)
E—Tension Nut
F—Bushing
G—Linkage
H—Washer (3 used)
I—Spring Pin (2 used)
J—Nut (3 used)
K—Ball Joint Socket
L—Lever
M—Bushing (2 used)
N—Linkage
O—Snap Ring
P—Washer (2 used)
Q—Swivel
R—Lever
S—Foot Speed Control Lever
T—Knob
U—Bolt
V—Washer (2 used)
W—Plate
X—Cotter Pin (3 used)
Y—Tension Spring
Z—Tension Bolt

1. Open hood.

2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

3. Inspect parts for wear and damage. Replace as necessary.

4. Adjust throttle lever. (See Reference 220-15-???, Throttle Lever Adjustment—5603 Cab Tractors in TM2197 Section 220, Group 15.)

5. If equipped, adjust 540/540E PTO lever and linkage adjustment. (See Reference 256-15-???, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)

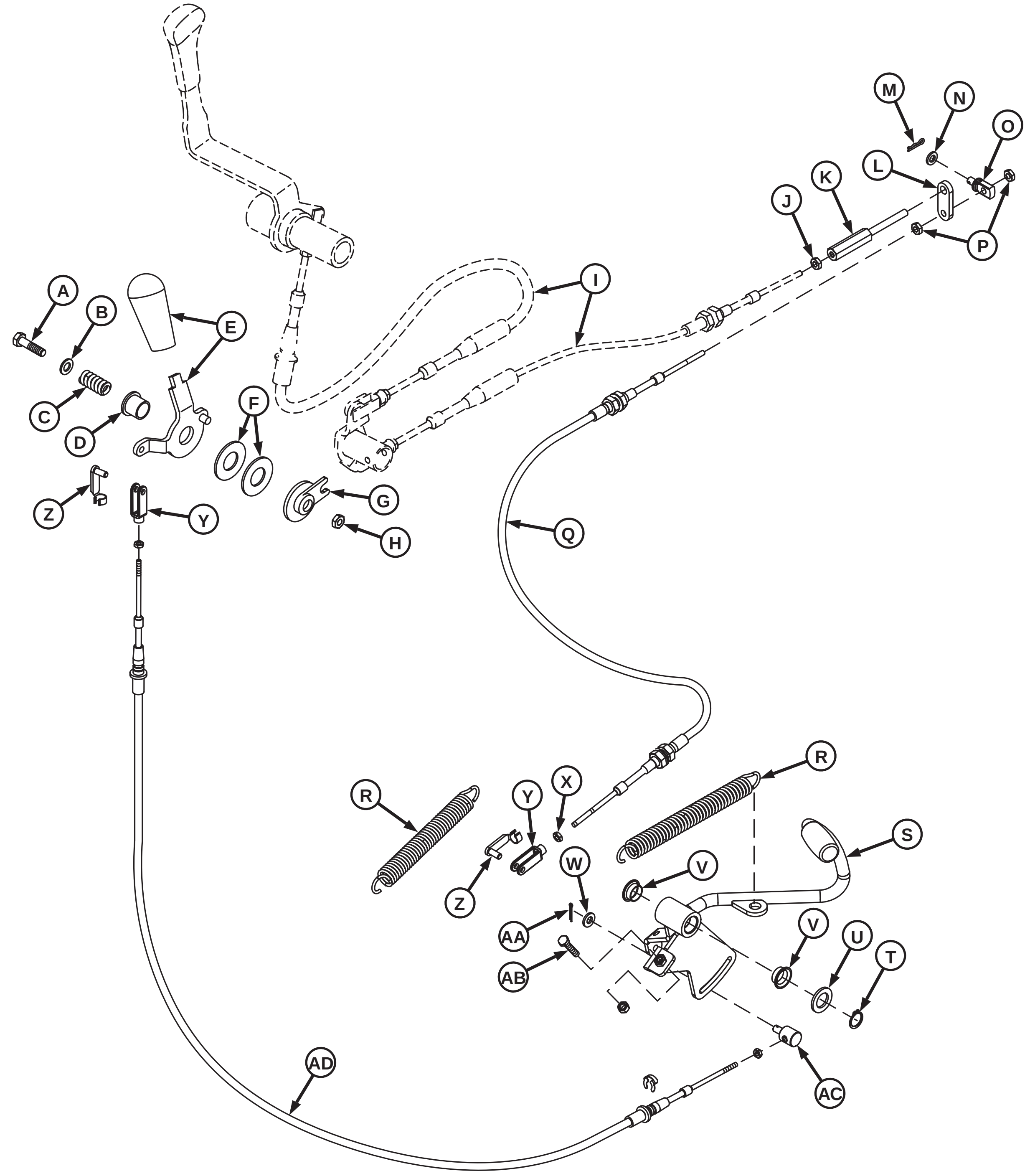
6. Adjust fast and slow idle. (See CTM104.)

7. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

8. Close hood.

OUO1023,0002A28 –19–11DEC06–2/2

Inspect and Repair Speed Control Linkage—5-Cylinder Engine—Isolated Open Operator Station and Cab Tractors


M
N
O
L
K
J
P
I
A
B
E
C
D
F
G
H
Z
Y
Q
R
X
Y
R
S
W
V
Z
AA
V
U
T
AB
AD
AC

LV9453 –UN–10AUG04

Continued on next page

A—Cap Screw
B—Washer
C—Tension Spring
D—Round Retainer
E—Throttle Lever and Knob
F—Washer (2 used)
G—Plate
H—Nut
I—Lever and Cable (540/540E PTO)
J—Jam Nut (540/540E PTO)
K—Guide (540/540E PTO)
L—Plate (540/540E PTO)
M—Cotter Pin
N—Washer
O—Swivel
P—Nut (2 used)
Q—Throttle Cable
R—Spring (2 used)
S—Foot Throttle Lever
T—Snap Ring
U—Washer
V—Bushing (2 used)
W—Washer
X—Jam Nut
Y—Yoke (2 used)
Z—Spring Locking Pin (2 used)
AA—Cotter Pin
AB—Cap Screw, Pedal Stop
AC—Swivel
AD—Throttle Cable

1. Open hood.
2. Remove control knobs from right controls.
3. Remove right control panel cover.
4. Remove control knobs from PTO and 540/540E PTO levers.
5. Remove cover from PTO controls.
6. Inspect parts for wear or damage. Replace as necessary.
7. Adjust throttle lever. (See Reference 220-15-003, Throttle Lever Adjustment—Isolated Open Operator Station and Cab Tractors in TM2197 Section 220, Group 15.)
8. Adjust foot throttle pedal stop. (See Reference 220-15-004, Foot Throttle Pedal Stop Adjustment—Isolated Open Operator Station and Cab Tractors in TM2197 Section 220, Group 15.)
9. Adjust fast and slow idle. (See CTM301.)
10. If equipped, adjust 540/540E PTO lever and linkage adjustment. (See Reference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)
11. Install cover over PTO controls.
12. Install control knobs on PTO levers.
13. Install right control panel.
14. Install control knobs on right control levers.
15. Close hood.

OUO1083,00006B3 –19–11DEC06–2/2

Inspect and Repair Speed Control Linkage—540/1000 PTO

- Straddle Mount tractors with 4-cylinder engine—see Inspect and Repair Speed Control Linkage—4-Cylinder Engine—Straddle Mount in Section 30, Group 15.
- Straddle Mount tractors with 5-cylinder engine—see Inspect and Repair Speed Control Linkage—5-Cylinder Engine—Straddle Mount in Section 30, Group 15.
- Isolated Open Operator Station and Cab tractors with 4-cylinder engine—see Inspect and Repair Speed Control Linkage—4-Cylinder Engine—Isolated Open Operator Station and Cab Tractors in Section 30, Group 15.
- Isolated Open Operator Station and Cab tractors with 5-cylinder engine—see Inspect and Repair Speed Control Linkage—5-Cylinder Engine—Isolated Open Operator Station and Cab Tractors in Section 30, Group 15.

OUO1083,00006B4 –19–11DEC06–1/1

Section 40

Electrical Repair

Contents

Page

Group 05—Battery, Starter and Alternator
Starter Repair—Use CTM77 40-05-1
Prevent Battery Explosions 40-05-1
Remove and Install Battery 40-05-2
Remove and Install Starter—5-Cylinder Engine 40-05-3
Remove and Install Starter—4-Cylinder Engine 40-05-4
Replace Alternator/Regulator—4-Cylinder Engine 40-05-5
Replace Alternator/Regulator—5-Cylinder Engine 40-05-6

Group 10—Electrical System Components
Essential Tools 40-10-1
Other Material 40-10-1
Specifications 40-10-1
Replace Air Filter Restriction Switch 40-10-2
Replace Cold Start Advance Switch 40-10-2
Replace Coolant Temperature Sender—5-Cylinder Tractors 40-10-3
Replace Coolant Temperature Sender—4-Cylinder Tractors 40-10-3
Replace Engine Speed Sensor 40-10-4
Replace Engine Oil Pressure Switch 40-10-5
Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors. 40-10-5
Replace Key Switch—5603 40-10-7
Replace Light Switch—5225, 5325, 5425, 5525 and 5625 40-10-8
Replace Light Switch—5603 40-10-9
Replace Speakers. 40-10-9
Replace Antenna. 40-10-10
Replace Turn Signal Switch—5225, 5325, 5425, 5525 and 5625. 40-10-14
Replace Turn Signal Switch—5603 40-10-15
Replace Instrument Panel—Straddle Mount 40-10-16
Replace Instrument Panel—5225, 5325, 5425, 5525 and 5625 IOOS and Cab Tractors 40-10-18
Replace Instrument Panel—5603 Cab Tractor. 40-10-22
Program Instrument Cluster 40-10-22
Replace Rear PTO Switch—Straddle Mount 40-10-28

Page

Replace Rear PTO Switch—Isolated Open Operator Station and Cab Tractors 40-10-28
Replace Rear PTO Switch—Electro-Hydraulic PTO 40-10-29
Replace Rockshaft Control Module—Electro-Hydraulic Hitch. 40-10-30
Replace Load Depth Control—Electro-Hydraulic Hitch. 40-10-35
Replace Neutral Start Switch—Straddle Mount—SYNCSHUTTLE™ Transmission . . .40-10-37
Replace Neutral Start Switch—Isolated Open Operator Station and Cab Tractors—SYNCSHUTTLE™ Transmissions 40-10-37
Replace Fuel Level Sender—Straddle Mount 40-10-38
Replace Fuel Level Sender—Isolated Open Operator Station and Cab Tractors . .40-10-39
Replace Wiper Control Switch—5225, 5325, 5425, 5525 and 5625. 40-10-40
Replace Wiper Control Switch—5603 40-10-41
Replace Wiper Motor 40-10-42
Replace Blower Control Switch 40-10-44
Replace A/C On/Off Switch. 40-10-44
Replace A/C Temperature Control Switch 40-10-45
Replace Blower Motor Resistor 40-10-46
Replace Air Conditioning High/Low Pressure Switch. 40-10-47
Replace Dome Light .40-10-48
Replace Door Switch. 40-10-49
Replace Seat Switch—Isolated Open Operator Station and Cab Tractors 40-10-50
Replace Seat Switch—Straddle Mount Tractors 40-10-51
Replace VEC Load Center—Isolated Open Operator Station .40-10-55
Replace VEC Load Center—Cab Tractors . . .40-10-58
Replace VEC Load Center—Straddle Mount 40-10-59
Replace Electro-Hydraulic Controller—5225, 5325, 5425, 5525 and 5625 IOOS and Cab Tractors 40-10-60
Replace Electro-Hydraulic Controller—5603 40-10-61

Continued on next page

Page

Replace Electro-Hydraulic Controller—Straddle Mount 40-10-62
Replace Start Relay .40-10-63
Replace Hitch Solenoids—Isolated Open Operator Station and Cab Tractors With EH Hitch 40-10-64
Replace Countershaft Speed Sensor—POWRREVERSER™ Tractors 40-10-65
Replace Wheel Speed Sensor 40-10-66
Replace Enable Pressure Sensor—POWRREVERSER™ Transmission 40-10-67
Replace Clutch Pedal Position Sensor—POWRREVERSER™ Transmission 40-10-68
Replace Clutch Disengage Switch—POWRREVERSER™ Transmission 40-10-70
Replace Rear PTO Sensor—POWRREVERSER™ Transmission—With Electro-Hydraulic PTO 40-10-73
Replace Hitch Draft Sensor—Electro-Hydraulic Hitch. 40-10-74
Replace Hitch Position Sensor—Electro-Hydraulic Hitch. 40-10-75
Replace Electro-Hydraulic Directional Reverser—POWRREVERSER™ Transmission 40-10-78
Replace Park Switch—POWRREVERSER™ Transmission 40-10-83
Replace Brake Pedal Switch—Electro-Hydraulic Tractors 40-10-83
Replace Hi/Lo Shifter Switch—POWRREVERSER™ Transmission 40-10-84
Replace Mid-Mount Solenoid Switch 40-10-85
Replace External Raise/Lower Switch—Isolated Open Operator Station and Cab Tractors. .40-10-90
Replace Mid-Mount Solenoid. 40-10-91
Replace Clutch Enable Solenoid—POWRREVERSER™ Transmission 40-10-92
Replace Trans Forward Solenoid—POWRREVERSER™ Transmission 40-10-93
Replace Trans Reverse Solenoid—POWRREVERSER™ Transmission 40-10-94
Replace High Solenoid—POWRREVERSER™ Transmission—With Electro-Hydraulic Hi/Lo 40-10-95
Replace Rear PTO Solenoid—Electro-Hydraulic PTO 40-10-95
Replace MFWD Solenoid 40-10-96
Replace MFWD Switch 40-10-97
Replace Seat Height Control Switch (Optional Equipment) 40-10-98

Group 15—Wiring Harness

Service Equipment and Tools 40-15-1
Essential Tools 40-15-1
Service Parts Kits 40-15-2
Replace Connector Body—Blade Terminals . . .40-15-2
Replace WEATHER PACK™ Connector 40-15-3
Install WEATHER PACK™ Contact 40-15-4
Electrical Connector Repair
  METRI-PACK (Pull-Type) 40-15-5
  METRI-PACK (Push-Type) 40-15-6
Replace Headlight Wiring Harness 40-15-10
Replace Fused Power Wiring Harness 40-15-12
Replace Engine Wiring Harness—5-Cylinder 40-15-14
Replace Engine Wiring Harness—4-Cylinder 40-15-16
Replace Console Wiring Harness, Isolated Open Operator Station—SYNCSHUTTLE™ Transmission 40-15-18
Replace Console Wiring Harness, Isolated Open Operator Station—POWRREVERSER™ Transmission 40-15-20
Replace Console Wiring Harness, Cab Tractors—SYNCSHUTTLE™ Transmission 40-15-22
Replace Console Wiring Harness, Cab Tractors—POWRREVERSER™ Transmission 40-15-24
Replace Rear Wiring Harness, Straddle Mount—SYNCSHUTTLE™ Transmission . . .40-15-26
Replace Rear Wiring Harness, Straddle Mount—POWRREVERSER™ Transmission 40-15-28
Replace Rear Wiring Harness, Isolated Open Operator Station—SYNCSHUTTLE™ Transmission 40-15-30
Replace Rear Wiring Harness, Isolated Open Operator Station, Mechanical Hitch—POWRREVERSER™ Transmission 40-15-32
Replace Rear Wiring Harness, Isolated Open Operator Station, Electro-Hydraulic Hitch—POWRREVERSER™ Transmission 40-15-34
Replace Rear Wiring Harness, Cab Tractors—SYNCSHUTTLE™ Transmission 40-15-36
Replace Rear Wiring Harness, Cab Tractors, Mechanical Hitch—POWRREVERSER™ Transmission 40-15-38
Replace Rear Wiring Harness, Cab Tractors, Electro-Hydraulic Hitch—POWRREVERSER™ Transmission 40-15-40

Continued on next page

Page

Replace Cab Roof Wiring Harness 40-15-42

Starter Repair—Use CTM77

For complete repair information the component technical manual (CTM) is also required. Use the component technical manual in conjunction with this machine manual.

TS225 –UN–17JAN89

JG31785,000000D –19–30AUG04–1/1

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

TS204 –UN–23AUG88

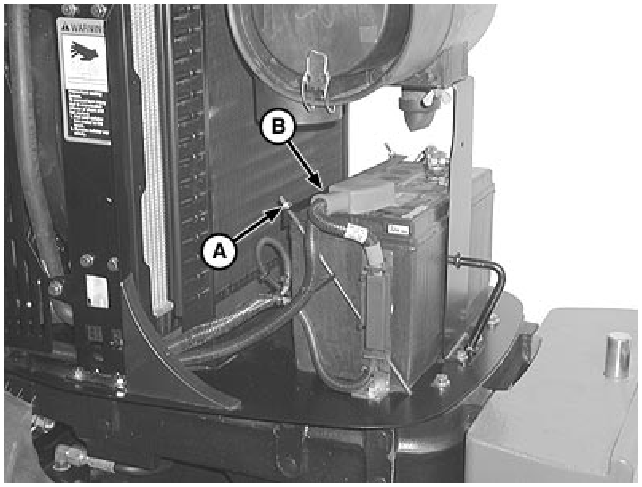
OUO1082,0000561 –19–15DEC04–1/1

Remove and Install Battery

CAUTION: Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive. To avoid sparks, connect ground cable last and disconnect it first.

To avoid shocks and burns, disconnect battery ground cable before servicing any part of electrical system.

1. Disconnect negative (—) battery cable first, then positive (+) battery cable.
2. Loosen nuts (A) and rotate hold-down bracket (B) away from battery.
3. Remove battery. Clean and service as necessary.
4. Install battery.
5. Install hold-down bracket (B) and tighten nuts (A).
6. Connect positive (+) battery cable first, then negative (—) battery cable.
7. Apply petroleum jelly to battery terminals to prevent corrosion.



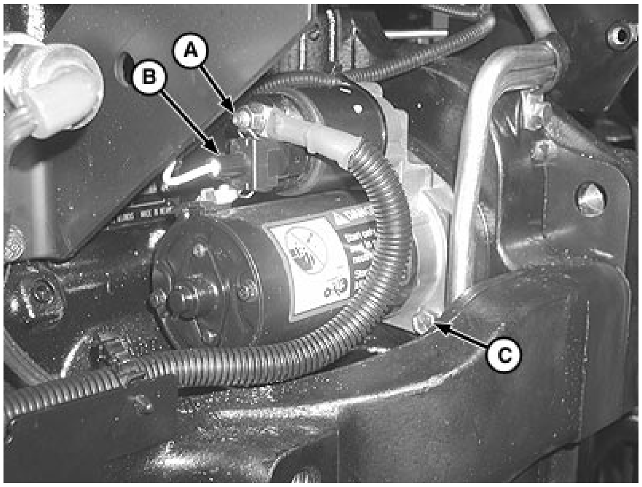
LV9899 –UN–03AUG04

A—Nut (2 used)
B—Hold-Down Bracket

JG31785,000000E –19–30AUG04–1/1

Remove and Install Starter—5-Cylinder Engine

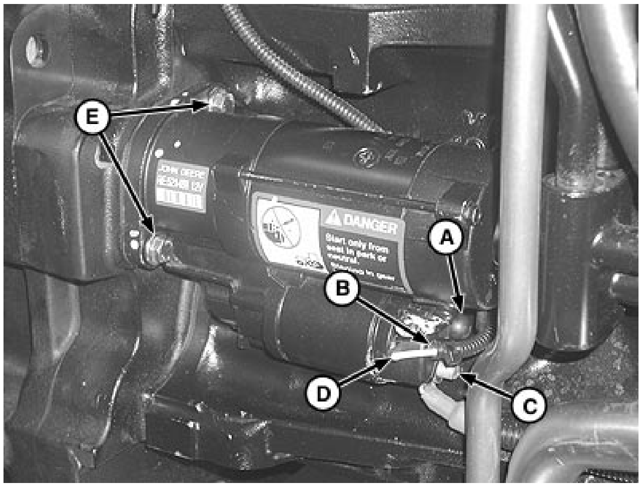
1. Disconnect negative (—) battery cable.
2. Disconnect cable at stud (A).
3. Disconnect wire lead at terminal (B).
4. Remove cap screws (C).
5. Remove starter.
6. Make repairs as necessary. (See CTM77.)
7. Install starter using cap screws (C).
8. Connect wire lead at terminal (B).
9. Connect cable at stud (A).
10. Connect negative (—) battery cable.



A—Starter Solenoid Stud
B—Starter Solenoid Terminal
C—Cap Screw (2 used)

JG31785,000000F –19–30AUG04–1/1

Remove and Install Starter—4-Cylinder Engine



1. Disconnect negative (—) battery cable.
2. Remove captured nut (A), and remove starter cover (B).
3. Disconnect cable at stud (C).
4. Disconnect wire lead at stud (D).
5. Remove cap screws (E).
6. Remove starter.
7. Make repairs as necessary. (See CTM77.)
8. Install starter using cap screws (E).
9. Connect wire lead at stud (D).
10. Connect cable at stud (C).
11. Install starter cover (B) and tighten captured nut (A).
12. Connect negative (—) battery cable.

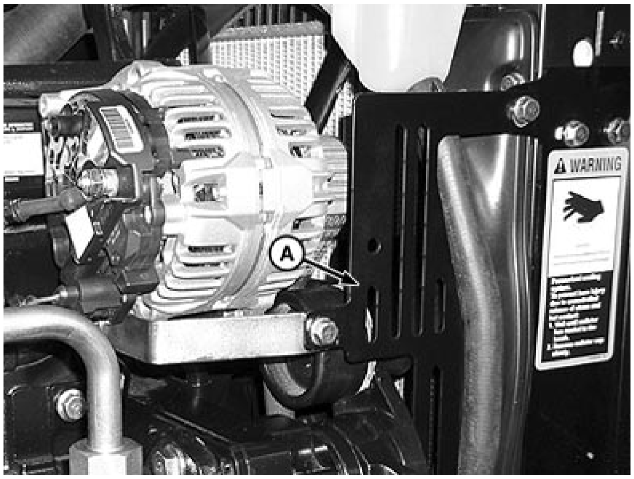
A—Captured Nut
B—Starter Cover
C—Starter Solenoid Stud
D—Starter Solenoid Stud
E—Cap Screw (2 used)

JG31785,0000010 –19–30AUG04–1/1

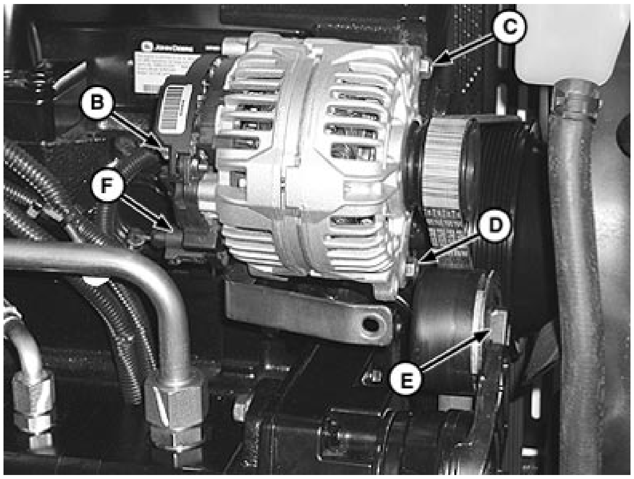
Replace Alternator/Regulator—4-Cylinder Engine

1. Disconnect negative (—) battery cable.
2. Remove fan guard (A).
3. Disconnect wire connector (F) and cable (B).
4. Place a wrench on upper belt tensioner pulley (E), and rotate counterclockwise to relieve belt tension. Remove belt from alternator/regulator pulley.
5. Remove cap screws (D and C).
6. Replace alternator/regulator.
7. Install cap screws (D and C).
8. Install belt on alternator/regulator pulley.
9. Connect wire connector (F) and cable (B).
10. Install fan guard (A).
11. Connect negative (—) battery cable.

A—Fan Guard
B—Cable
C—Cap Screw
D—Cap Screw
E—Upper Belt Tensioner Pulley
F—Wire Connector



LV9910 –UN–05AUG04



LV9911 –UN–10AUG04

40
05
5

JG31785,0000011 –19–30AUG04–1/1

Replace Alternator/Regulator—5-Cylinder Engine

1. Disconnect negative (—) battery cable.

2. Remove fan guard (A) and support bracket (B).

3. Disconnect wire connector (G) and cable (C).

4. Place a wrench on upper belt tensioner pulley (F), and rotate clockwise to relieve belt tension. Remove belt from alternator/regulator pulley.

5. Remove cap screws (D and E).

6. Replace alternator/regulator.

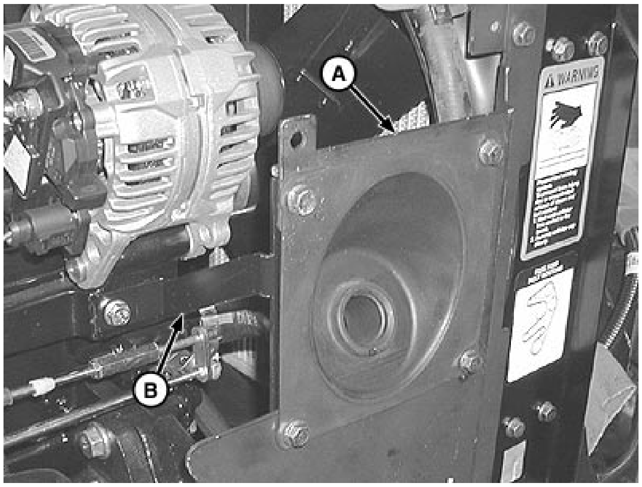
7. Install cap screws (D and E).

8. Install belt on alternator/regulator pulley.

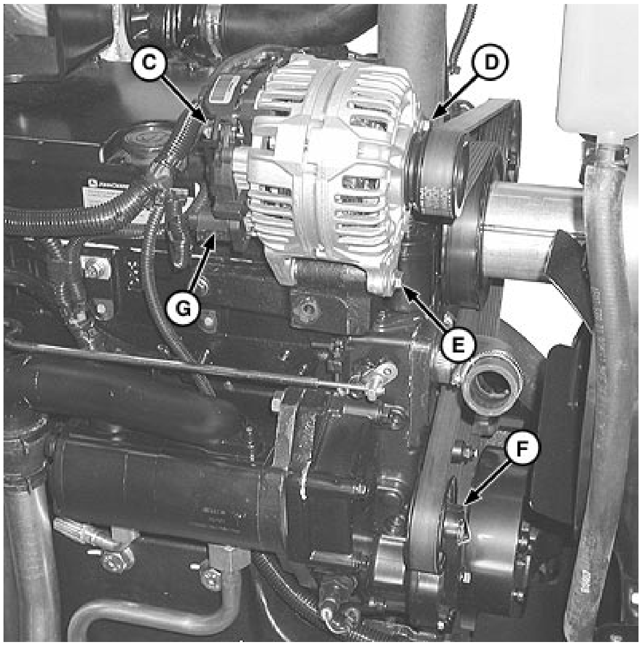
9. Connect wire connector (G) and cable (C).

10. Install fan guard (A) and support bracket (B).

11. Connect negative (—) battery cable.



LV10232 –UN–27AUG04



LV10234 –UN–27AUG04

A—Fan Guard
B—Support Bracket
C—Cable
D—Cap Screw
E—Cap Screw
F—Upper Belt Tensioner Pulley
G—Wire Connector

JG31785,0000012 –19–30AUG04–1/1

Electrical System Components

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

JG31785,00001C6 –19–15NOV04–1/2

Special Socket JDG465

Used to remove/install oil pressure switch.

JG31785,00001C6 –19–15NOV04–2/2

Other Material

Number	Name	Use
R68349 (U.S.)	Sealant	Apply around antenna lead opening.
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to oil pressure switch threads.

LOCTITE is a trademark of Loctite Corp.

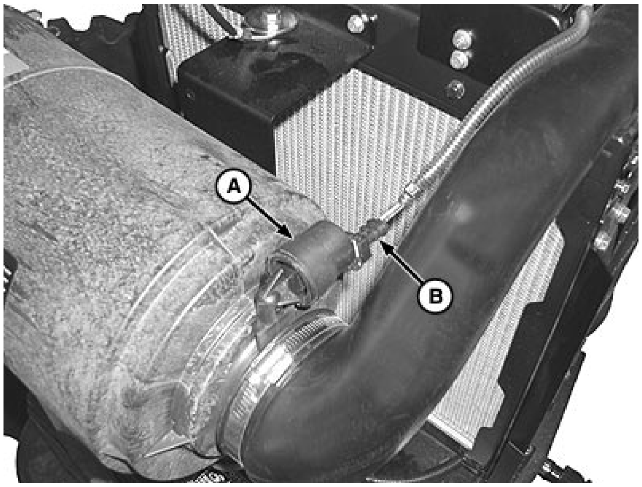
JG31785,00001C8 –19–15NOV04–1/1

Specifications

Item	Measurement	Specification
Neutral Start Switch	Torque	50 N•m (37 lb-ft)

JG31785,000040F –19–16FEB05–1/1

Replace Air Filter Restriction Switch



LV10122 –UN–01SEP04

1. Disconnect wire connector (B) and remove air filter restriction switch (A).
2. Replace air filter restriction switch (A).
3. Connect wire connector (B).

A—Air Filter Restriction Switch
B—Wire Connector

JG31785,0000182 –19–15NOV04–1/1

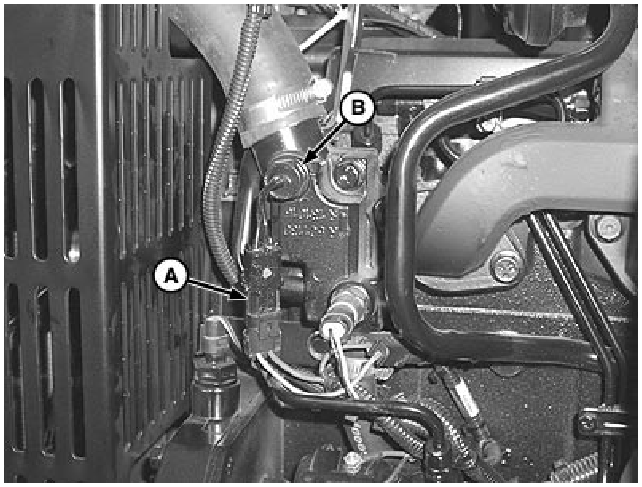
Replace Cold Start Advance Switch

TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

NOTE: See CTM207 for more information on cold start advance switch.



LV10123 –UN–01SEP04

1. Disconnect wire connector (A).
2. Remove cold start advance switch (B).
3. Apply John Deere Pipe Sealant with TEFLON®, or an equivalent, to threads of new cold start advance switch.
4. Install new cold start advance switch (B).
5. Connect wire connector (A).

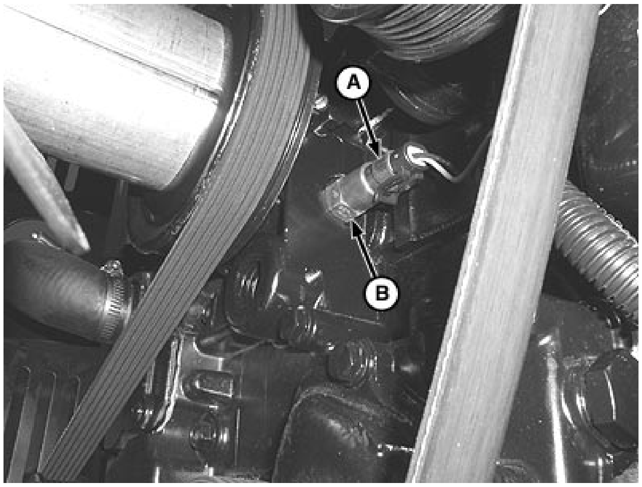
A—Wire Connector
B—Cold Start Advance Switch

TEFLON is a registered trademark of the Du Pont Co.

JG31785,0000183 –19–15NOV04–1/1

Replace Coolant Temperature Sender—5-Cylinder Tractors

1. Disconnect wire connector (A).
2. Remove coolant temperature sender (B).
3. Apply John Deere Pipe Sealant with TEFLON®, or an equivalent, to threads of new temperature sender.
4. Install new coolant temperature sender (B).
5. Connect wire connector (A).



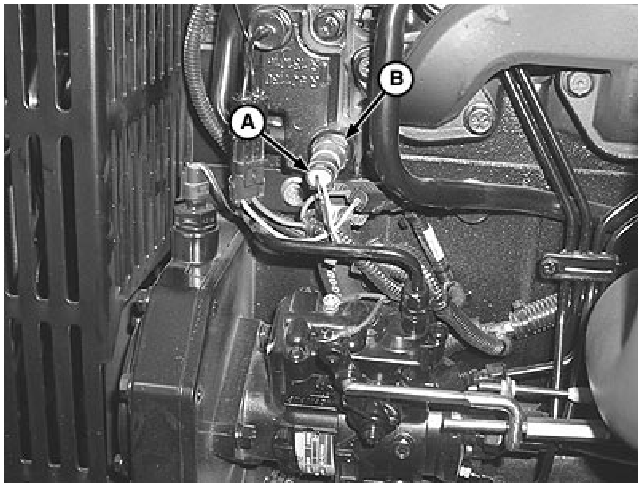
A—Wire Connector
B—Coolant Temperature Sender

TEFLON is a registered trademark of the Du Pont Co.

JG31785,0000184 –19–07NOV06–1/1

Replace Coolant Temperature Sender—4-Cylinder Tractors

1. Disconnect wire connector (A).
2. Remove coolant temperature sender (B).
3. Apply John Deere Pipe Sealant with TEFLON®, or an equivalent, to threads of new temperature sender.
4. Install new coolant temperature sender (B).
5. Connect wire connector (A).



A—Wire Connector
B—Coolant Temperature Sender

TEFLON is a registered trademark of Du Pont Co.

JG31785,0000185 –19–07NOV06–1/1

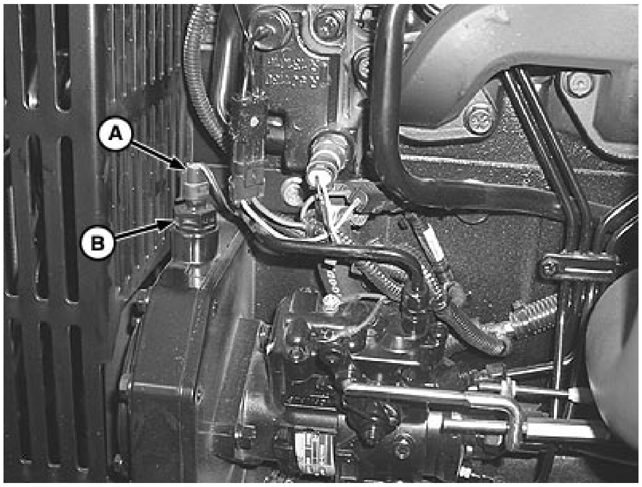
Replace Engine Speed Sensor

1. Disconnect wire connector (A).

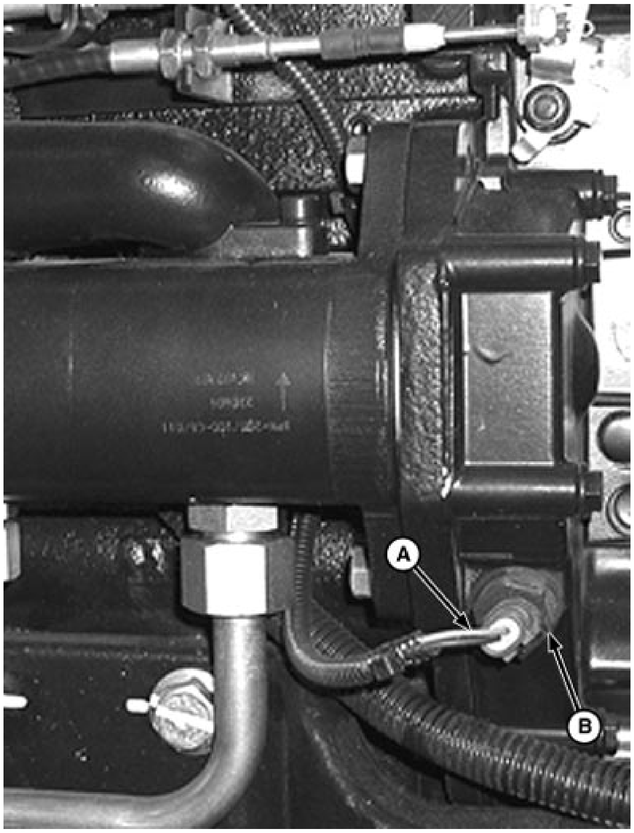
IMPORTANT: Speed sensor is plastic. Do not overtighten or sensor will be damaged.

2. Replace engine speed sensor and O-ring (B).
3. Connect wire connector (A).

A—Wire Connector
B—Engine Speed Sensor and O-Ring



Engine Speed Sensor (4-Cylinder)



Engine Speed Sensor (5-Cylinder)

JG31785,0000186 –19–15NOV04–1/1

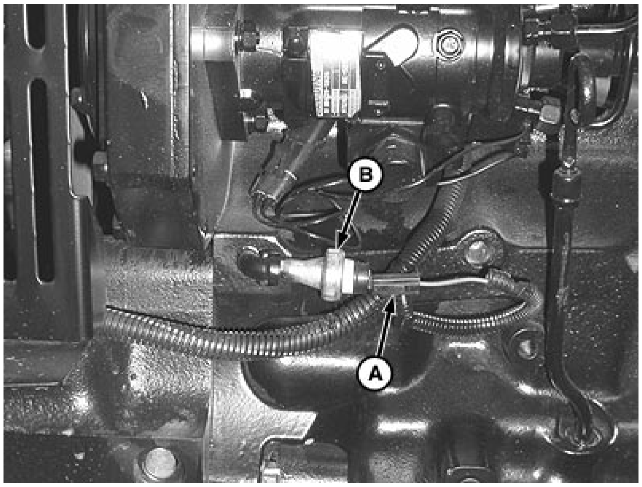
Replace Engine Oil Pressure Switch

NOTE: 4-cylinder engine shown; 5-cylinder is similar.

1. Disconnect wire connector (A).

NOTE: JDG465 Special Socket may be used to replace switch.

2. Remove engine oil pressure switch (B).
3. Apply thread lock and sealer (medium strength) to threads of new oil pressure switch.
4. Install new engine oil pressure switch (B).
5. Connect wire connector (A).



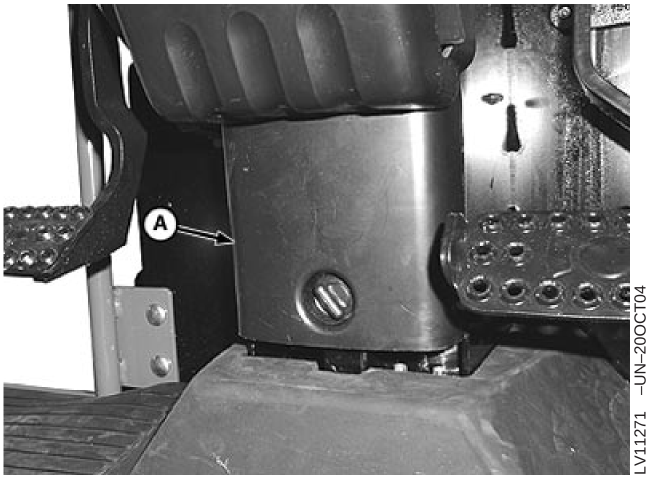
A—Wire Connector
B—Engine Oil Pressure Switch

JG31785,0000187 –19–15NOV04–1/1

Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors

1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Remove cover (A), if equipped.

A—Cover



Continued on next page

JG31785,0000189 –19–07NOV06–1/3

4. Remove two screws (B) and switch panel (C).

5. Remove nut (D).

6. Disconnect key switch from wire connector (E) and replace key switch.

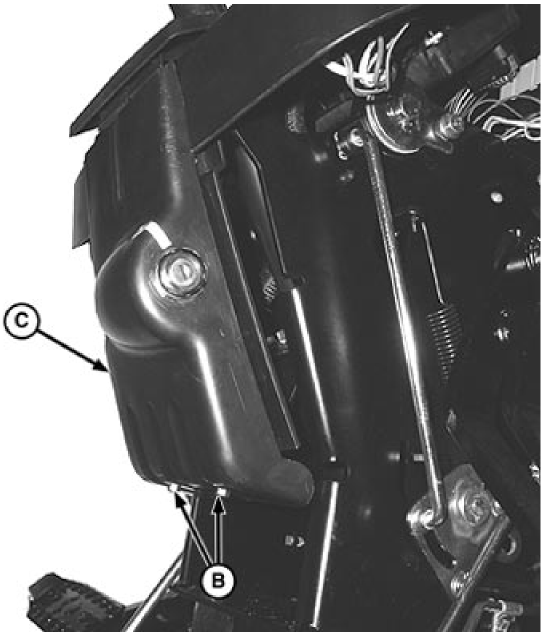
7. Install key switch in switch panel and secure using nut (D).

8. Connect wire connector (E).

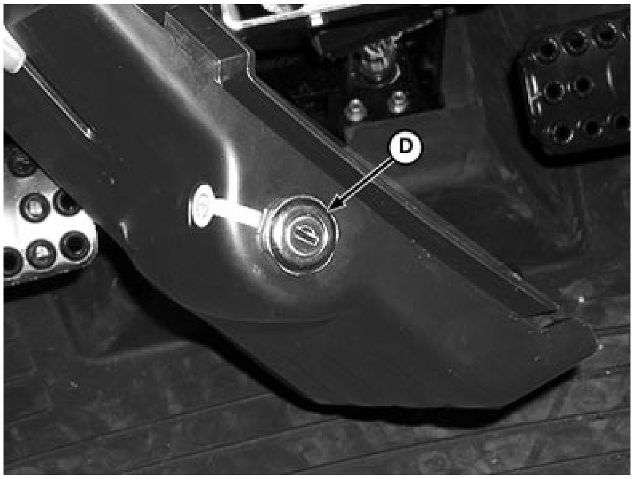
9. Install switch panel (C) using two screws (B).

10. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

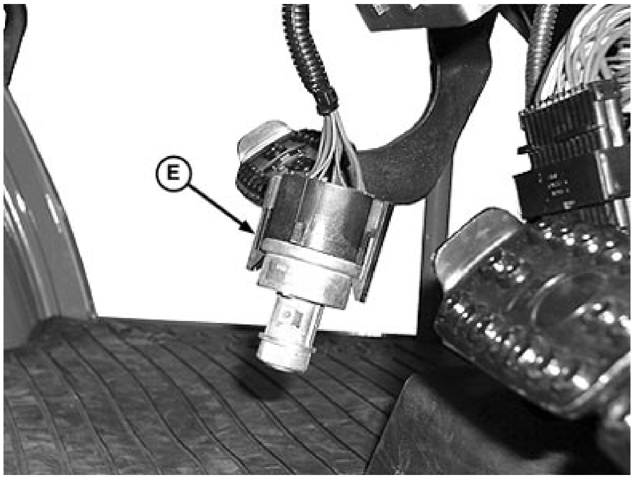
B—Screw (2 used)
C—Switch Panel
D—Nut
E—Wire Connector



LV11272 –UN–20OCT04



LV11273 –UN–20OCT04

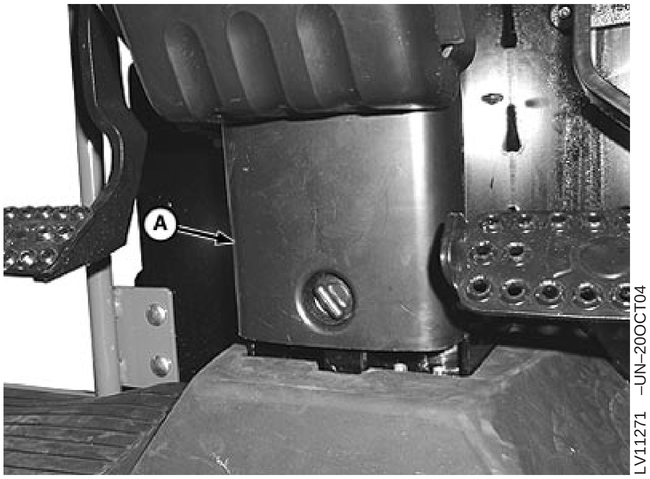


LV11274 –UN–20OCT04

Continued on next page

11. Install cover (A), if equipped.
12. Connect battery negative (—) cable.

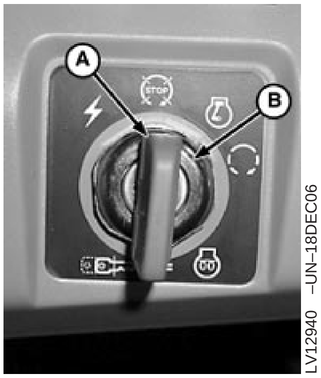
A—Cover

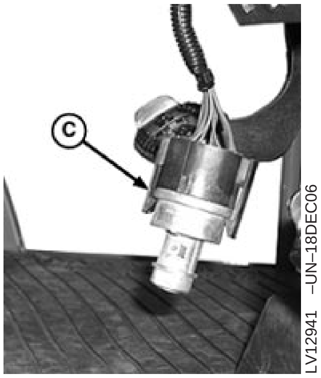

A
LV11271 –UN–20OCT04

JG31785,0000189 –19–07NOV06–3/3

Replace Key Switch—5603

1. Disconnect battery negative (—) cable.
2. Remove key (A) and nut (B).
3. Disconnect key switch from wire connector (C) and replace key switch.
4. Install new key switch in switch panel and secure using nut (B).
5. Connect wire connector (C).
6. Connect battery negative (—) cable.


A
B
STOP
LV12940 –UN–18DEC06


C
LV12941 –UN–18DEC06

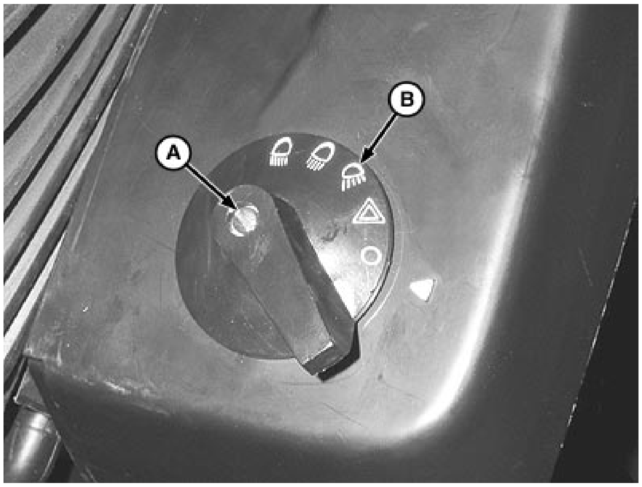
A—Key
B—Nut
C—Wire Connector

OUO1023,0002A7C –19–14DEC06–1/1

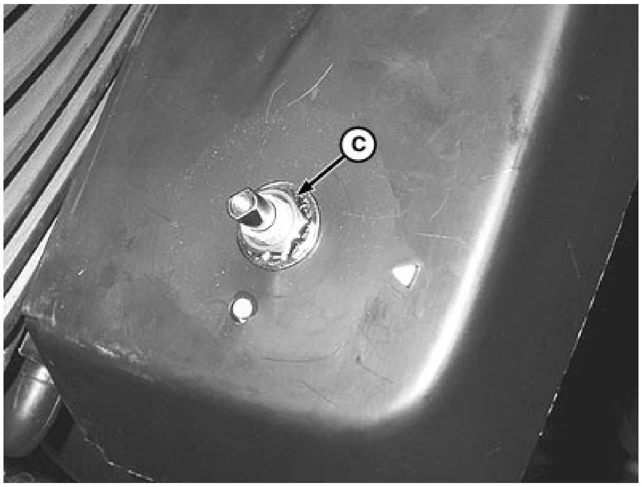
Replace Light Switch—5225, 5325, 5425, 5525 and 5625

NOTE: Cab tractor shown. Isolated Open Operator Station and Straddle Mount tractors are similar.

1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Disconnect wire leads (D—I).
4. Remove screw (A) and knob (B).
5. Remove nut and lock washer (C).
6. Replace light switch.
7. Install lock washer and nut (C).
8. Install knob (B) and screw (A).
9. Connect wire leads (D—I).
10. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
11. Connect battery negative (—) cable.

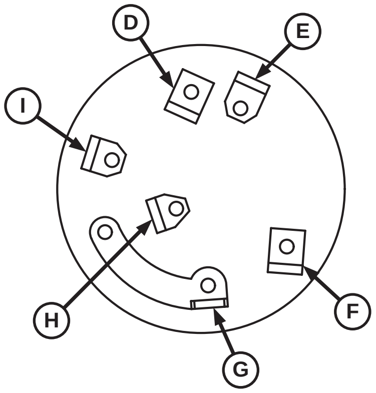


LV10519 –UN–14SEP04



LV10521 –UN–14SEP04

A—Screw
B—Light Switch Knob
C—Nut and Lock Washer
D—104A and 104B Yellow Wire Leads
E—108 Gray Wire Lead
F—109A and 109B White Wire Leads
G—106A and 106B Blue Wire Leads
H—102 Red Wire Lead
I—107 Violet Wire Lead



LV10518 –UN–14SEP04

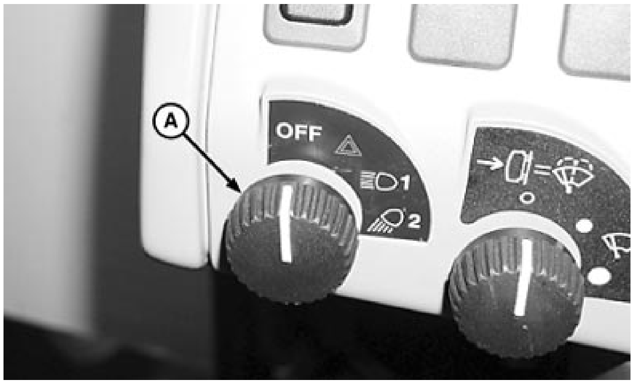
Blade (Terminals) on End of Switch

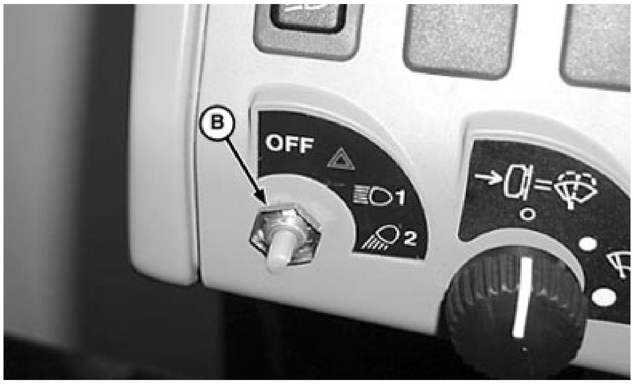
JG31785,000018A –19–07NOV06–1/1

Replace Light Switch—5603

1. Disconnect battery negative (—) cable.
2. Remove knob (A) and retainer nut (B).
3. Disconnect harness connector and replace light switch.

A—Knob
B—Retainer Nut


A
OFF
1
2
LV12932 –UN–14DEC06


B
OFF
1
2
LV12933 –UN–14DEC06

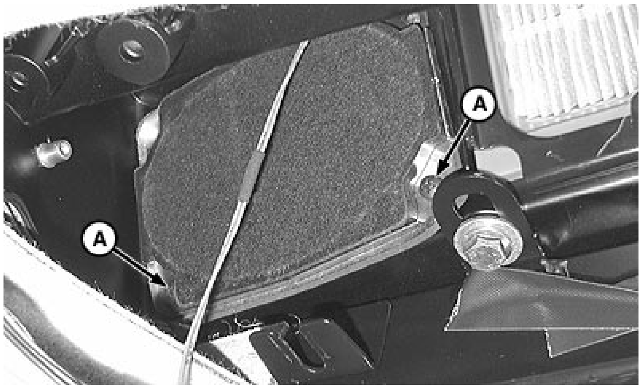
OUO1023,0002A77 –19–12DEC06–1/1

Replace Speakers

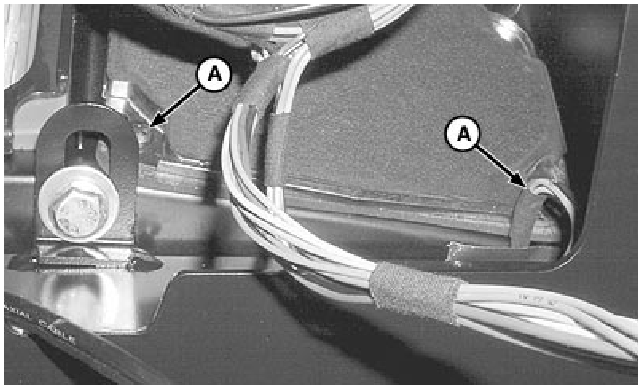
NOTE: Speakers are located in cab roof, behind right-side radio housing and left-side dome light assembly.

1. Remove right-side radio housing and left-side dome light assembly.
2. Remove two screws (A) securing speaker to cab panel.
3. Disconnect wire connector from speaker.
4. Connect wire connector to new speaker.
5. Install speaker with two screws (A).
6. Install right-side radio housing and left-side dome light assembly.

A—Screw (2 used)


A
A
LV8713 –UN–28AUG03

Left Speaker


A
A
LV8759 –UN–28AUG03

Right Speaker

JG31785,000018B –19–15NOV04–1/1

Replace Antenna

1. Remove antenna whip from base.
2. Remove four screws and lower radio housing. Disconnect antenna lead.
3. Remove heater control panel to access antenna lead. (See Replace Heater Temperature Control Cable in Section 90, Group 25.)

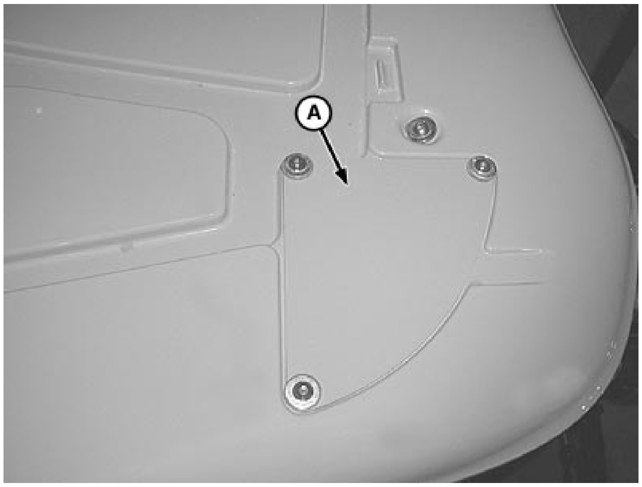
Continued on next page

JG31785,000018C –19–15NOV04–1/6

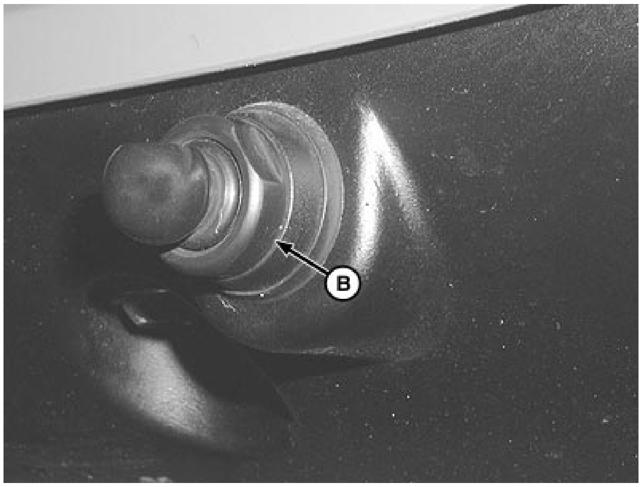
4. Remove front-right corner access panel (A) from cab roof.

5. Remove nut from antenna base (B) and pull base into access cavity (C).

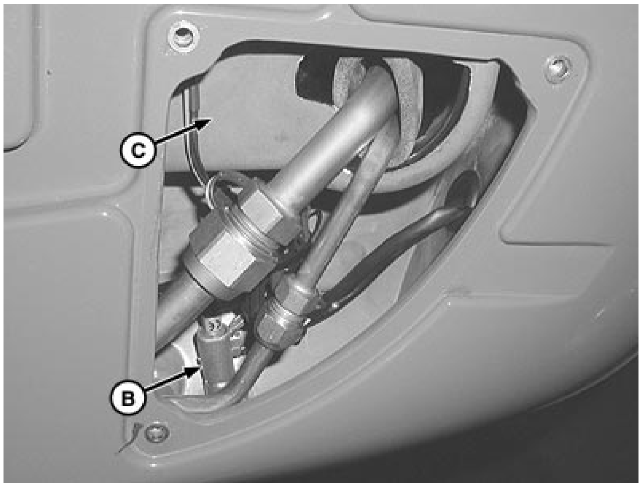
A—Access Panel
B—Antenna Base
C—Access Cavity



LV8751 –UN–25AUG03



LV8752 –UN–25AUG03



LV8753 –UN–25AUG03

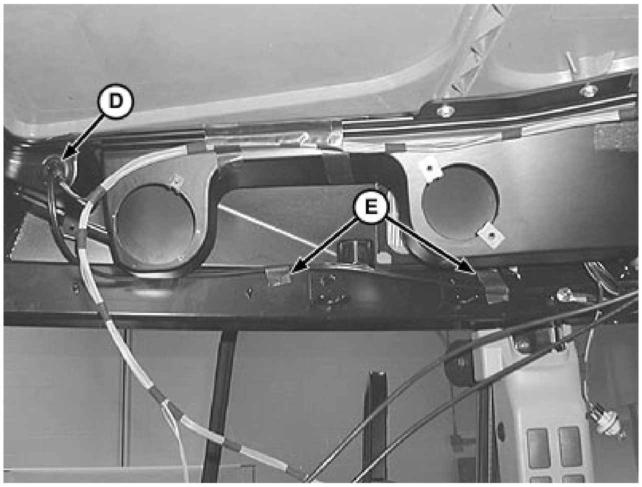
Continued on next page

JG31785,000018C –19–15NOV04–2/6

6. Remove tape (E) securing lead to cab frame. Remove sealant from grommet (D).

7. Remove antenna base and lead assembly from tractor by pulling out through access cavity.

D—Grommet
E—Tape

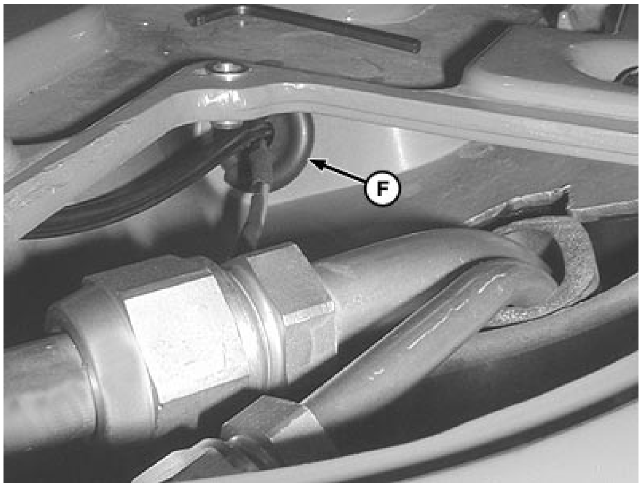


Headliner Removed to Show Antenna Lead Routing More Clearly

JG31785,000018C –19–15NOV04–3/6

8. Push new antenna lead through grommet (F) from outside cab. From inside cab, pull antenna lead by working through heater control cavity.

F—Grommet



Continued on next page

JG31785,000018C –19–15NOV04–4/6

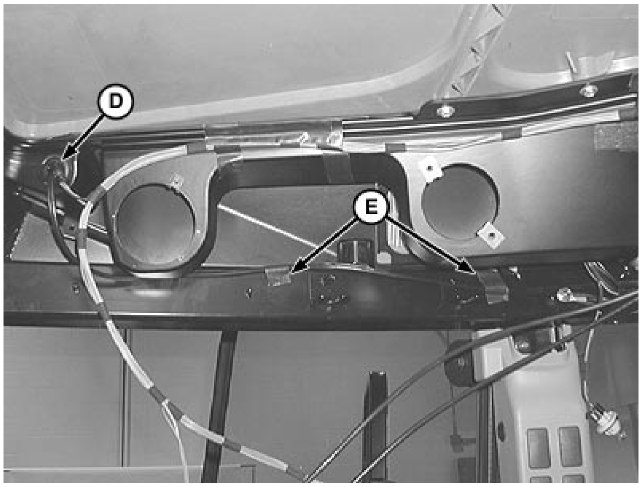
9. Route and connect antenna lead to radio. Secure antenna lead to cab frame using strong adhesive tape (E).

10. Apply sealant R68349 around antenna lead through grommet (D).

11. Install radio and housing.

12. Install heater controls.

D—Grommet
E—Tape



LV8755 –UN–25AUG03

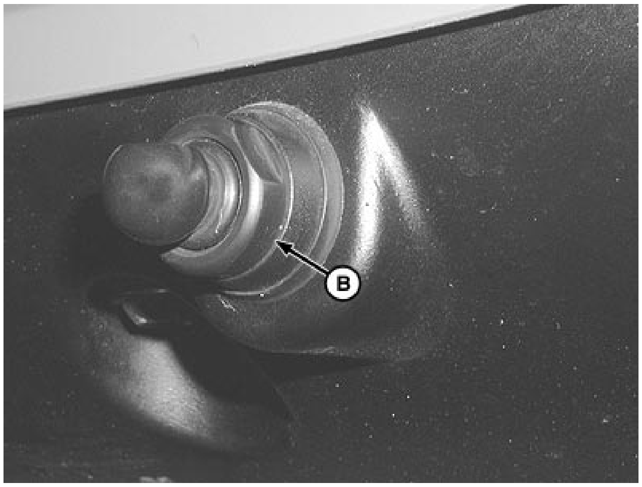
Headliner Removed to Show Antenna Lead Routing More Clearly.

JG31785,000018C –19–15NOV04–5/6

13. Install antenna base (B) in cab roof and tighten nut securely.

14. Install antenna whip.

B—Antenna Base



LV8752 –UN–25AUG03

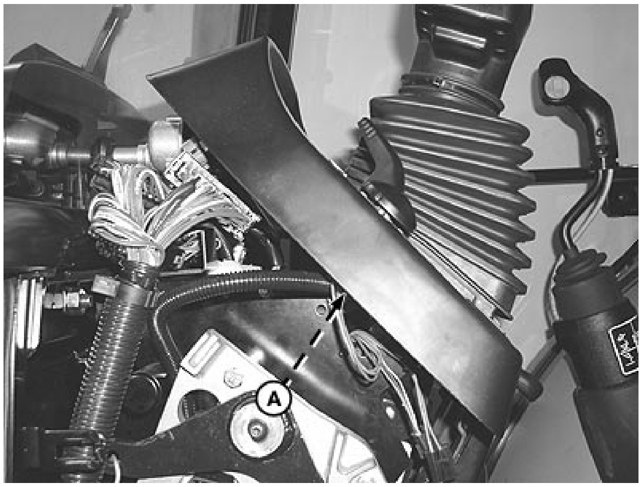
JG31785,000018C –19–15NOV04–6/6

Replace Turn Signal Switch—5225, 5325, 5425, 5525 and 5625

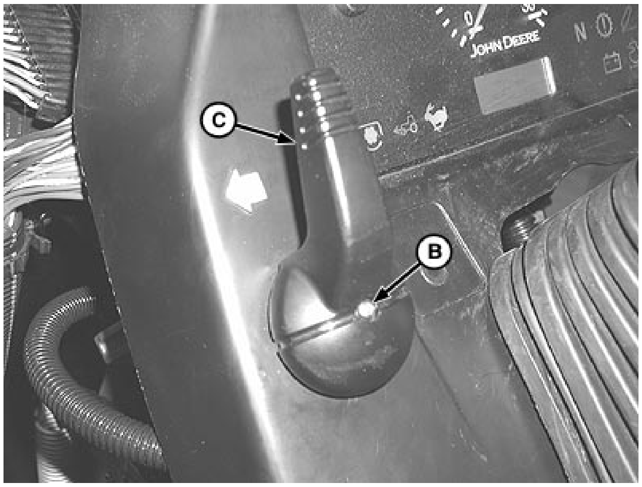
NOTE: Cab tractor shown, isolated open operator station and straddle mount similar.

1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Disconnect wire connector (A).
4. Remove screw (B) and lever (C).
5. Remove screws and nuts (D), and turn signal switch (E).
6. Install new turn signal switch (E) with screws and nuts (D).
7. Install lever (C) and screw (B).
8. Connect wire connector (A).
9. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

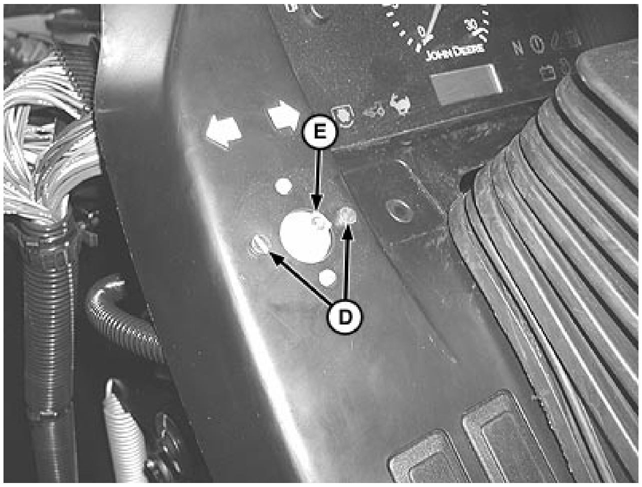
A—Wire Connector
B—Screw
C—Lever
D—Screw and Nut (2 used)
E—Turn Signal Switch



LV10522 –UN–14SEP04



LV10523 –UN–14SEP04

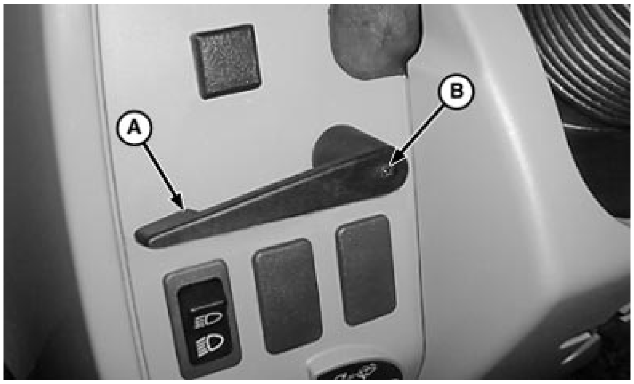


LV10524 –UN–14SEP04

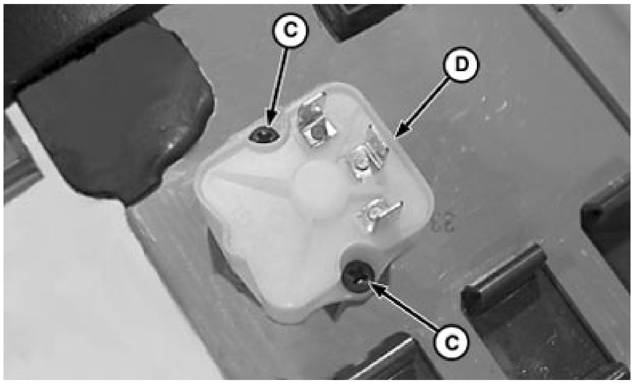
JG31785,000018D –19–12DEC06–1/1

Replace Turn Signal Switch—5603

1. Disconnect battery negative (—) cable.
2. Remove center control console. (SeeRemove and Install Center control Consolein Section 90, Group 06.)
3. Remove screw (A) and turn signal lever (B).
4. Remove two screws (C) and turn signal switch (D).
5. Install new turn signal switch (B) with screws (C).
6. Install lever (B) and screw (A).
7. Install center control console. (SeeRemove and Install Center control Consolein Section 90, Group 06.)



LV12934 –UN–14DEC06



LV12935 –UN–14DEC06

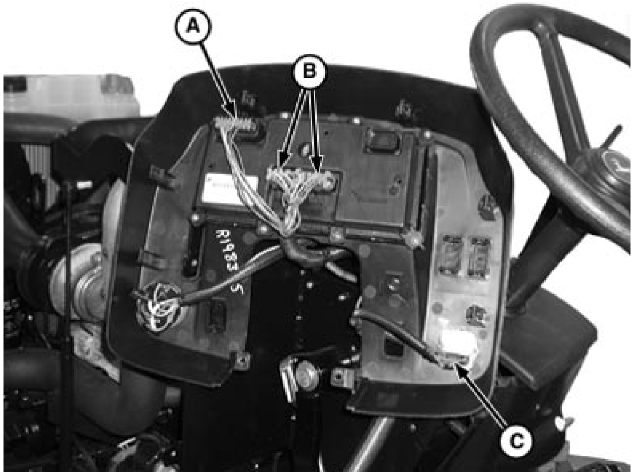
A—Screw
B—Turn Signal Lever
C—Screw (2 used)
D—Turn Signal Switch

OUO1023,0002A79 –19–12DEC06–1/1

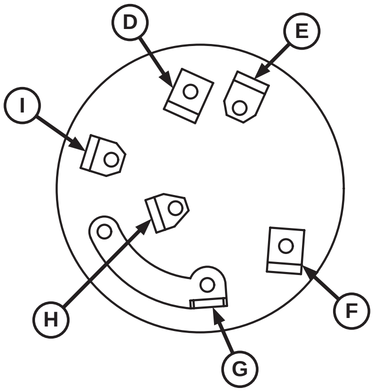
Replace Instrument Panel—Straddle Mount

1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Remove throttle lever knob and flip the instrument panel over.
4. Disconnect wire connectors (A—C).
5. Disconnect light switch wire leads (D—I).
6. Remove instrument panel assembly.

A—Wire Connector
B—Wire Connector
C—Wire Connector
D—104A and 104B Yellow Wire Leads
E—108 Gray Wire Lead
F—109A and 109B White Wire Leads
G—106A and 106B Blue Wire Leads
H—102 Red Wire Lead
I—107 Violet Wire Lead



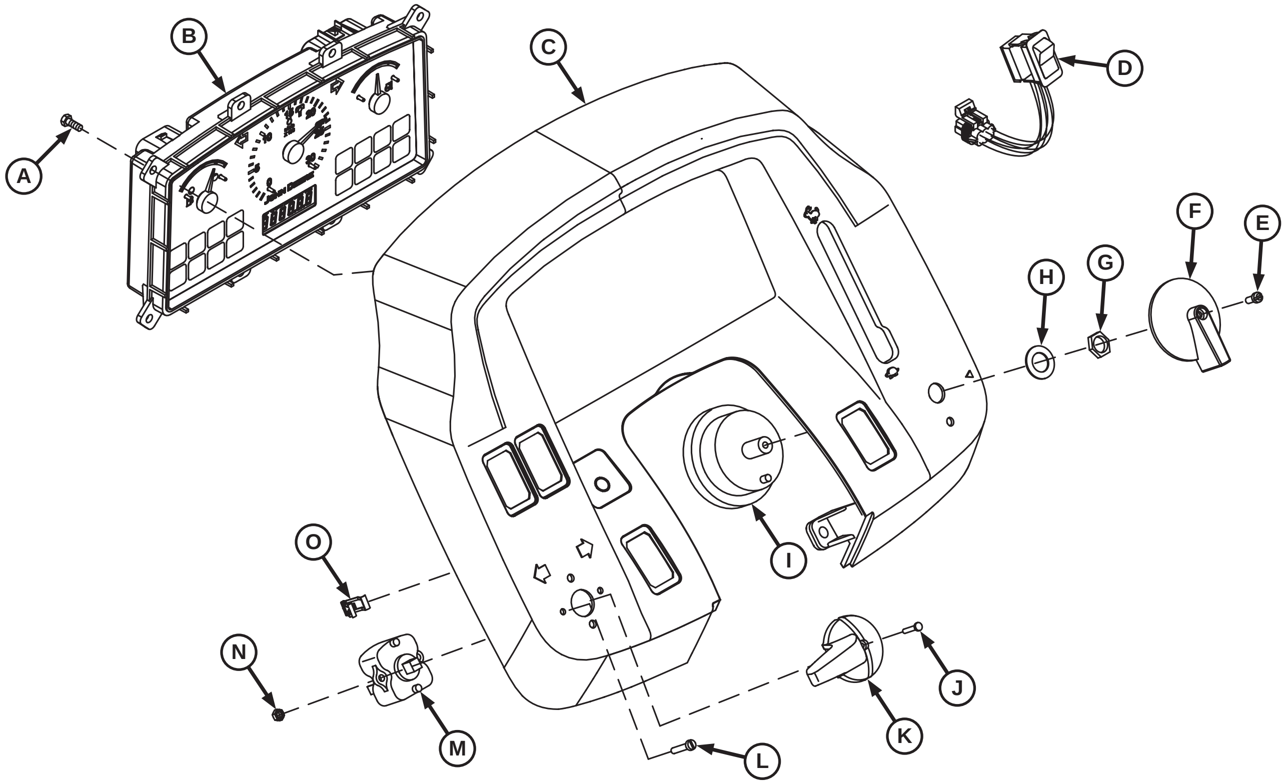
LV10855 –UN–06OCT04



LV10518 –UN–14SEP04

Continued on next page

JG31785,000018E –19–07NOV06–1/3



LV10864 –UN–07OCT04

A—Screw (8 used)
B—Instrument Cluster
C—Instrument Panel
D—MFWD Rocker/Toggle Switch
E—Screw
F—Knob
G—Nut
H—Lock Washer
I—Light Switch
J—Screw
K—Knob
L—Screw (2 used)
M—Turn Signal Switch
N—Nut (2 used)
O—Clip (6 used)

NOTE: The current engine hours **can not** *be programed into the new instrument cluster. Record the current engine hours in the service records for this tractor at the dealership and the Lubrication Maintenance Charts in the customers operator manual, if available. Also note the current engine hours on the back of new instrument cluster using a permanent marker.*

7. Inspect and replace parts (A—O) as necessary.

Continued on next page

JG31785,000018E –19–07NOV06–2/3

8. Connect wire connectors (A—C).

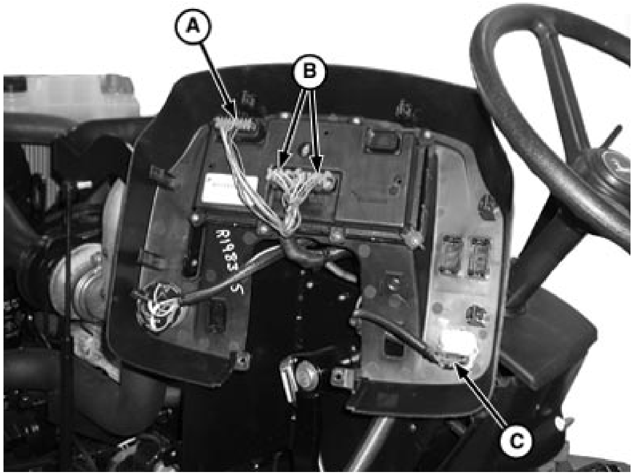
9. Connect light switch wiring leads (D—I).

10. Install throttle lever knob.

11. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

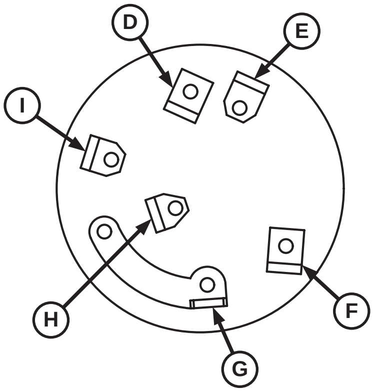
12. Connect battery negative (—) cable.

13. Program instrument cluster. (SeeProgram Instrument Cluster in Section 40, Group 10.)



LV10855 –UN–06OCT04

A—Wire Connector
B—Wire Connector
C—Wire Connector
D—104A and 104B Yellow Wire Leads
E—108 Gray Wire Lead
F—109A and 109B White Wire Leads
G—106A and 106B Blue Wire Leads
H—102 Red Wire Lead
I—107 Violet Wire Lead



LV10518 –UN–14SEP04

JG31785,000018E –19–07NOV06–3/3

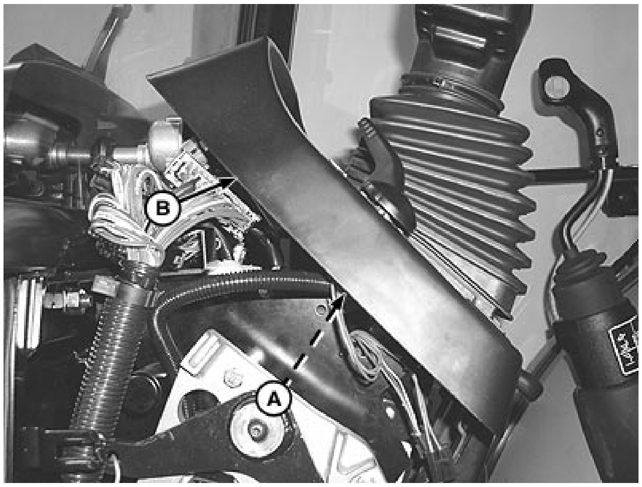
Replace Instrument Panel—5225, 5325, 5425, 5525 and 5625 IOOS and Cab Tractors

1. Disconnect battery negative (—) cable.

2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

3. Disconnect the turn signal wire connector (A), and move instrument panel (B) aside.

A—Turn Signal Wire Connector
B—Instrument Panel



LV10162 –UN–01SEP04

Continued on next page

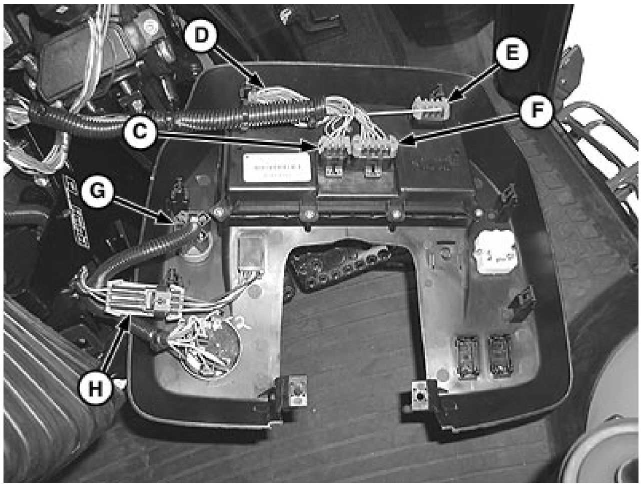
JG31785,000018F –19–07NOV06–1/5

4. Disconnect instrument cluster wire connectors (C—F).

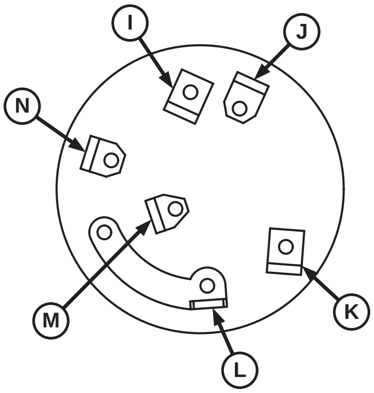
5. Cab Tractors: Disconnect wiper control switch wire connector (G).

6. Disconnect MFWD switch wire connector (H).

7. Disconnect light switch wire leads (I—N).



LV10502 –UN–07OCT04

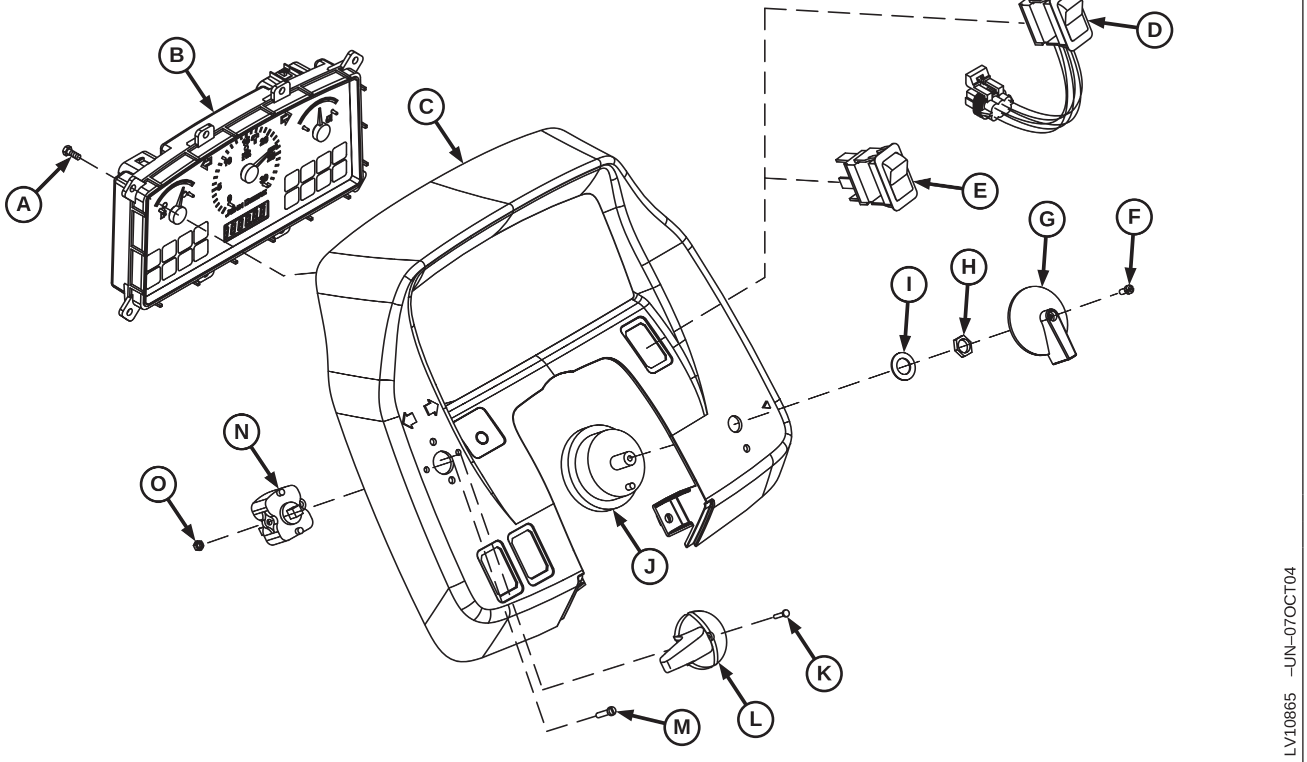


LV10869 –UN–07OCT04

C—Wire Connector
D—Wire Connector
E—Wire Connector
F—Wire Connector
G—Wiper Control Switch Wire Connector
H—MFWD Switch Wire Connector
I—104A and 104B Yellow Wire Leads
J—108 Gray Wire Lead
K—109A and 109B White Wire Leads
L—106A and 106B Blue Wire Leads
M—102 Red Wire Lead
N—107 Violet Wire Lead

Continued on next page

JG31785,000018F –19–07NOV06–2/5



A—Screw (8 used)
B—Instrument Cluster
C—Instrument Panel
D—MFWD Toggle/Rocker Switch (POWRREVERSER™ Transmission)
E—MFWD Toggle/Rocker Switch (SYNCSHUTTLE™ Transmission)
F—Screw
G—Knob
H—Nut
I—Lock Washer
J—Light Switch
K—Screw
L—Knob
M—Screw (2 used)
N—Turn Signal Switch
O—Nut (2 used)

NOTE: The current engine hours **can not** *be programed into the new instrument cluster. Record the current engine hours in the service records for this tractor at the dealership and the Lubrication Maintenance Charts in the customers operator manual, if available. Also note the current engine hours on the back of new instrument cluster using a permanent marker.*

8. Inspect and replace parts (A—O) as necessary.

POWRREVERSER is a trademark of Deere & Company
SYNCSHUTTLE is a trademark of Deere & Company

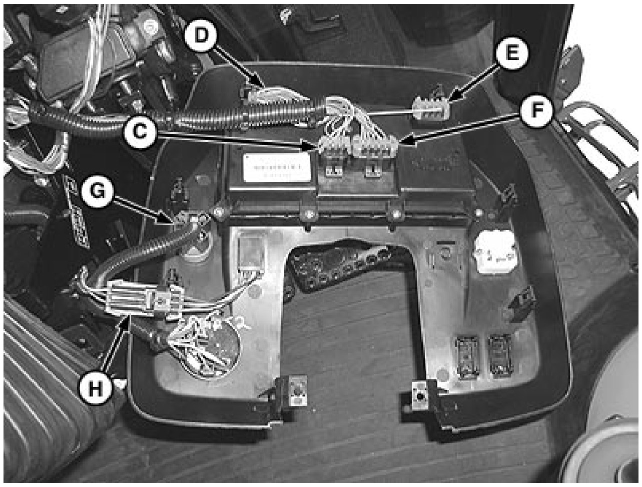
Continued on next page

9. Connect instrument cluster wire connectors (C—F).

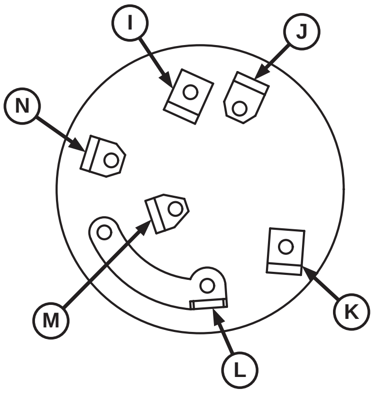
10. Cab tractors: Connect wiper control switch wire connector (G).

11. Connect MFWD switch wire connector (H).

12. Connect light switch wire leads (I—N).



LV10502 –UN–07OCT04



LV10869 –UN–07OCT04

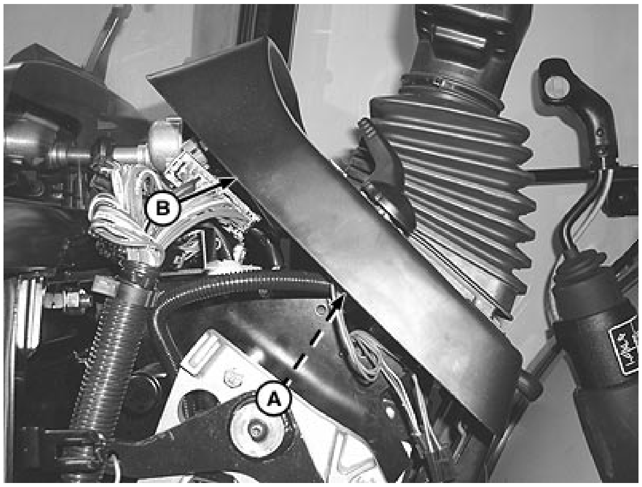
C—Wire Connector
D—Wire Connector
E—Wire Connector
F—Wire Connector
G—Wiper Control Switch Wire Connector
H—MFWD Switch Wire Connector
I—104A and 104B Yellow Wire Leads
J—108 Gray Wire Lead
K—109A and 109B White Wire Leads
L—106A and 106B Blue Wire Leads
M—102 Red Wire Lead
N—107 Violet Wire Lead

13. Turn the instrument panel (B) over, and connect the turn signal wire connector (A).

14. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

15. Connect battery negative (—) cable.

16. Program instrument cluster. (See Program Instrument Cluster in Section 40, Group 10.)

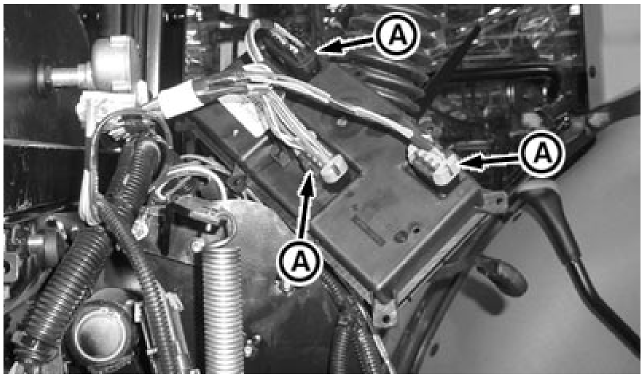


LV10162 –UN–01SEP04

A—Turn Signal Wire Connector
B—Instrument Panel

Replace Instrument Panel—5603 Cab Tractor

1. Disconnect battery, negative (—) cable.
2. Remove center control console. (SeeRemove and Install Center Control Console—5603 in Section 90, Group 06.)
3. Carefully lift dash toward driver’s seat and disconnect connectors (A).
4. Remove instrument panel.
5. Install new instrument panel.
6. Connect connectors (A) and slide dash into place.
7. Install center control console. (See Remove and Install Center Control Console—5603 in Section 90, Group 06.)



P14020 –UN–10FEB06

A—Harness Connectors

OUO1023,0002A2E –19–14DEC06–1/1

Program Instrument Cluster

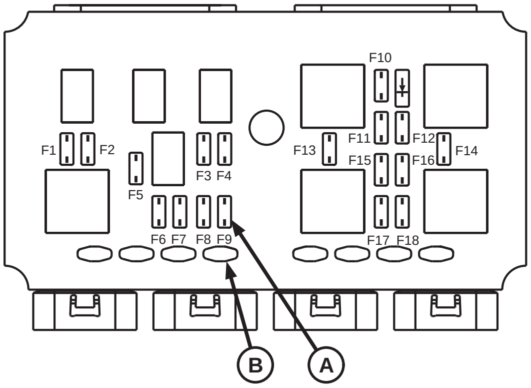
When installing a new instrument panel, the ground speed display must be configured to match the desired units (MPH or km/h) and the tire circumference in order to display the correct ground speed.

Continued on next page

OUO1023,0002A2D –19–13NOV06–1/7

1. Place key switch in OFF position.
2. Remove primary and secondary VEC load center access panels.
3. Move 5-amp fuse from storage position (B) to F9 position (A).

A—F9 Position
B—Storage Position


F10
F1
F2
F3
F4
F5
F6
F7
F8
F9
F11
F12
F13
F14
F15
F16
F17
F18
B
A

LV11840 –UN–09DEC04

Continued on next page

OUO1023,0002A2D –19–13NOV06–2/7

4. Place key switch in RUN position. The LCD display should read “00 00”. This is the “Access Level One” location. To gain access to the read/write memory, the “Access Level One” code (“11”) must be entered into the two data fields (E and F). The address fields (C and D) should be flashing.

   a. Move turn signal switch to the right turn position, and then back to center. The “Ones” digit field (F) should be flashing.

   b. Move turn signal switch to the left turn position, and then back to center one time to increment the “Ones” digit field to the value of “1”. If the value of “1” is passed, repeat cycling the turn signal switch to the left turn position and center until the display cycles back to “1”.

   c. Move turn signal switch to the right turn position, and back to center. The “Tens” digit field (E) should be flashing.

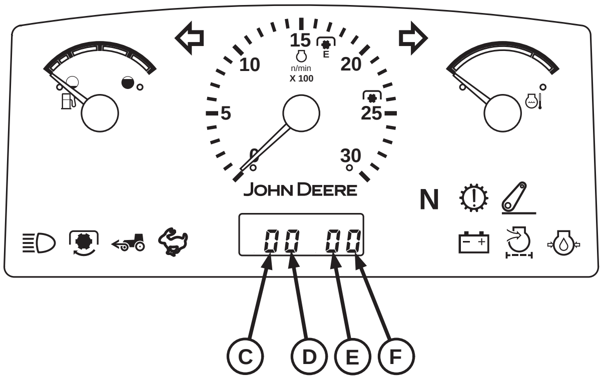
   d. Move turn signal switch to the left turn position, and then back to center one time to increment the “Ones” digit field to the value of “1”.

   e. Move turn signal switch to the right turn position. The address fields (C and D) should be flashing.

   f. Move turn signal switch to the left turn position, and then back to center. If the “Access Level One” value was not correct, the address field will default back to the “00” address. If the value was correct, the address will increment to the “Ground Speed Units” level (“01”).

NOTE: When the The “Ones” digit field (F) displays an even number value the instrument cluster will display MPH. When the The “Ones” digit field (F) displays an odd number value the instrument cluster will display Km/h. If installing a new instrument cluster the factory default is set to MPH.

5. To change the ground speed units from the default MPH to km/h:



LV11841 –UN–09DEC04

C—“Tens” Address Field
D—“Ones” Address Field
E—“Tens” Digit Field
F—“Ones” Digit Field

Continued on next page

   a. Move turn signal switch to the right turn position, and then back to center. The “Ones” digit field (F) should be flashing.

   b. Move turn signal switch to the left turn position, and then back to center one time to increment the “Ones” digit field to the value of “1”. The km/h ground speed symbol will be displayed.

   c. Move turn signal switch to the right turn position, and then back to center. The “Tens” digit field (E) should be flashing.

   d. Move turn signal switch to the right turn positions, and then back to center. The address fields (C and D) should be flashing.

6. To change the tire circumference setting from the default circumference setting (4369 mm):

   a. Move the turn signal switch to the left turn position, and then back to center. The address fields (C and D) should read “02”. The data fields (E and F) should read “43”.

   b. Determine the tire circumference from the tire chart.

Continued on next page

		Values To Be Entered in Address Fields			
Tire Size	**Tire Rolling Circumference in Millimeters**	**02**		**03**	
		Tens	**Ones**	**Tens**	**Ones**
21.5L-16.1 R3	3226	3	2	2	6
22.5LL-16.1 R3	3226	3	2	2	6
16.9-24 R4	3861	3	8	6	1
16.9-24 R3	3835	3	8	3	5
19.5L-24 R4	3886	3	8	8	6
16.9-24 R1	3912	3	9	1	2
13.6-28 R1	3886	3	8	8	6
14.9-28 R1	4039	4	0	3	9
16.9-28 R1	4216	4	2	1	6
420/90R30 R1	4369	4	3	6	9
230/95R40 R1 (Hi-Crop)	4432	4	4	3	2
480/80R30 R1W	4547	4	5	4	7
15.5-38 R1	4674	4	6	7	4
13.6-38 R2 (Hi-Crop)	4801	4	8	0	1
230/95 R48 4STAR R1 (Veggie)	5005	5	0	0	5

c. Move turn signal switch to the right turn position, and then back to center. The “Ones” digit field (F) should be flashing.

d. Move turn signal switch to the left turn position, and then back to center until the “Ones” digit field equals the number shown in the Tire Circumference Chart—Address Field “02”, “Ones”.

e. Move turn signal switch to the right turn position, and then back to center. The “Tens” digit field (E) should be flashing.

f. Move turn signal switch to the left turn position, and then back to center and repeat until the “Tens” digit field equals the number shown in the Tire Circumference Chart—Address Field “02”, “Tens”.

g. Move turn signal switch to the right turn position, and then back to center. The address fields (C and D) should be flashing.

Continued on next page

h. Move turn signal switch to the left turn position, and then back to center. The address fields should read “03”.

i. Move turn signal switch to the right turn position, and then back to center. The “Ones” digit field should be flashing.

j. Move turn signal switch to the left turn position, and then back to center until the “Ones” data field equals the number shown in the Tire Circumference Chart—Address Field “03”, “Ones”.

k. Move turn signal switch to the right turn position, and then back to center. The “Tens” digit field should be flashing.

l. Move turn signal switch to the left turn position, and then back to center until the “Tens” digit field equals the number shown in the Tire Circumference Chart—Address Field “03”, “Tens”.

m. Move turn signal switch to the right turn position, and then back to center. The address fields (C and D) should be flashing.

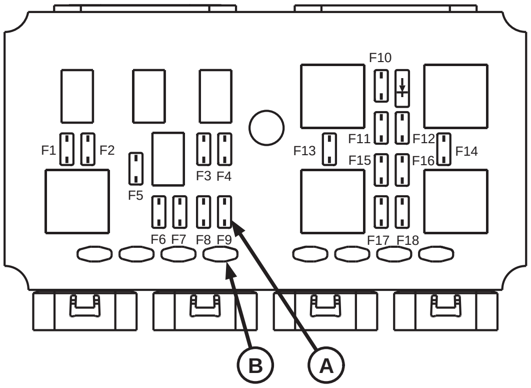
7. Place key switch in OFF position.

OUO1023,0002A2D –19–13NOV06–6/7

8. Remove 5-amp fuse from F9 position (A) and place it in the storage position (B).

9. Install secondary and primary VEC load center access panels.

A—F9 Position
B—Storage Position



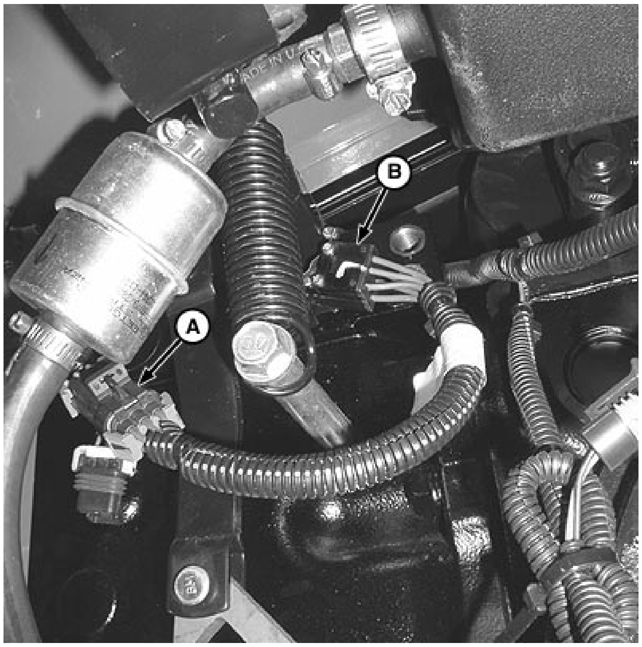
LV11840 –UN–09DEC04

OUO1023,0002A2D –19–13NOV06–7/7

Replace Rear PTO Switch—Straddle Mount

NOTE: PTO switch can be accessed from under tractor, near left-rear fender.

1. Disconnect rear PTO switch wire connector (A).
2. Replace rear PTO switch (B).
3. Connect wire connector (A).



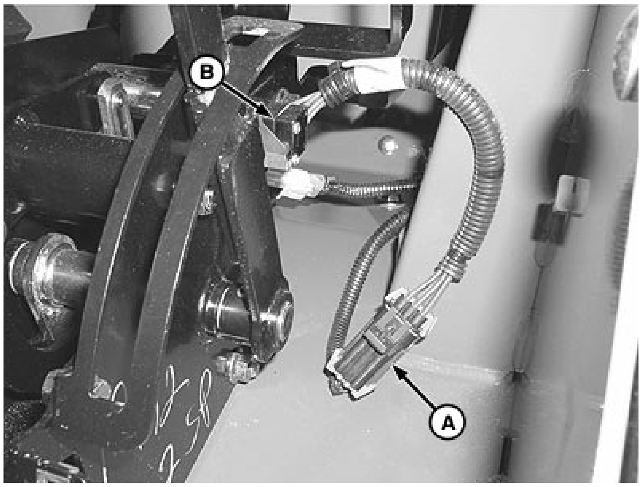
LV10168 –UN–14SEP04

A—PTO Switch Wire Connector
B—Rear PTO Switch

JG31785,0000190 –19–15NOV04–1/1

Replace Rear PTO Switch—Isolated Open Operator Station and Cab Tractors

1. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
2. Disconnect wire connector (A).
3. Replace rear PTO switch (B).
4. Connect wire connector (A).
5. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)



LV10167 –UN–14SEP04

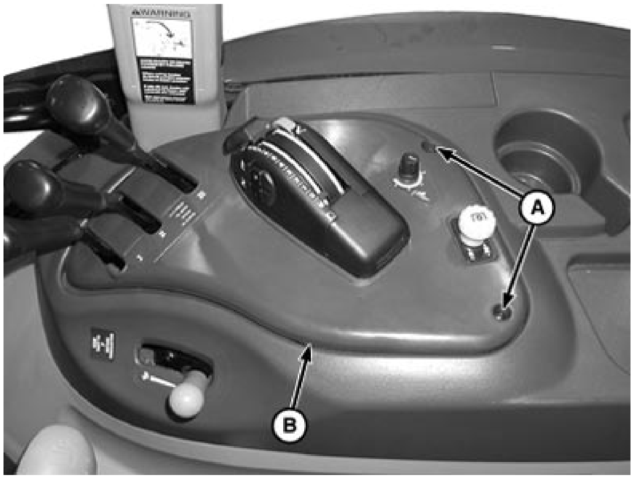
A—Wire Connector
B—Rear PTO Switch

JG31785,0000191 –19–15NOV04–1/1

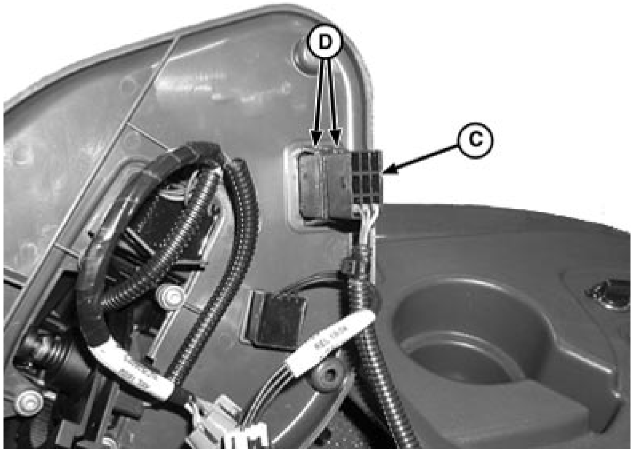
Replace Rear PTO Switch—Electro-Hydraulic PTO

1. Disconnect battery negative (—) cable.
2. Remove two screws (A) and console cover (B).
3. Disconnect wire connector (C).
4. Remove the PTO switch from the console cover by pressing in the spring-loaded tabs (D) on both sides of the switch.
5. Replace PTO switch.
6. Connect wire connector (C).
7. Before installing console cover, position foam blocks (E) and wiring harnesses to prevent contact between harnesses and moving parts.
8. Install console cover (B) and screws (A).
9. Connect battery negative (—) cable.

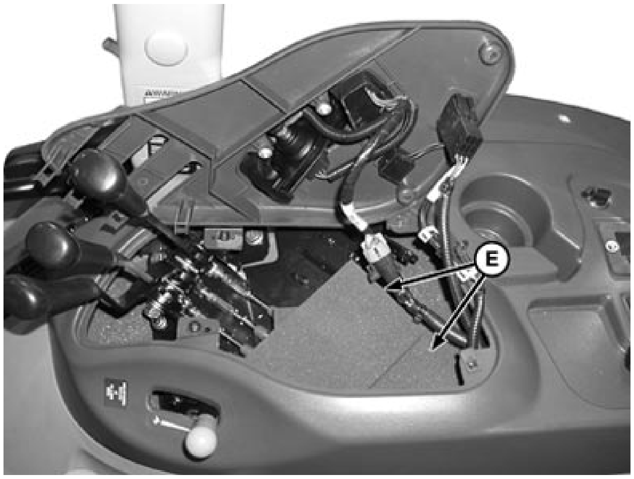
A—Screw (2 used)
B—Console Cover
C—Wire Connector
D—Tabs
E—Foam Blocks



LV10559 –UN–15SEP04



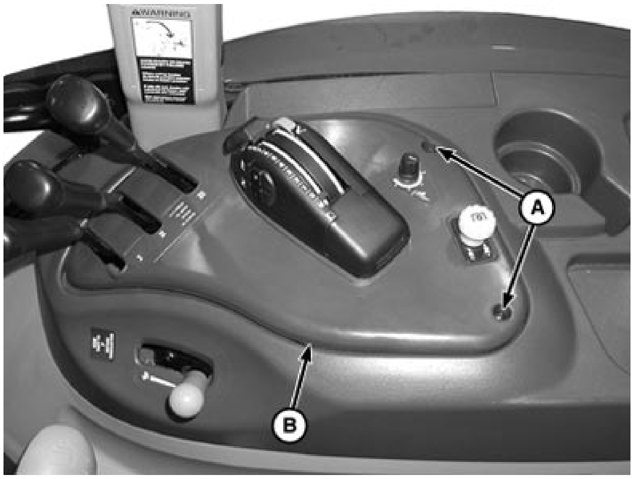
LV10567 –UN–15SEP04



LV10568 –UN–15SEP04

JG31785,0000192 –19–15NOV04–1/1

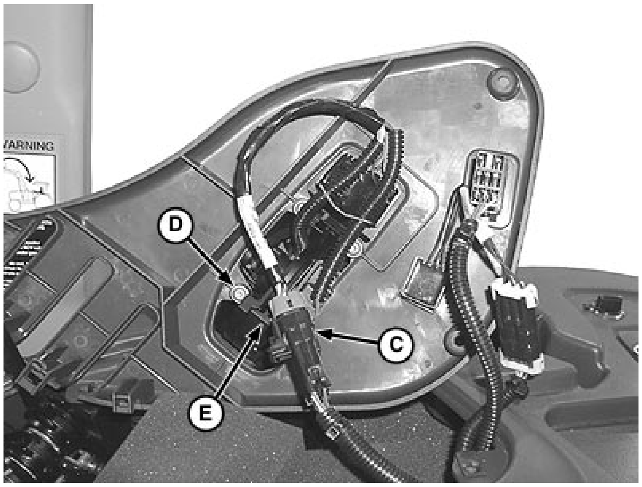
Replace Rockshaft Control Module—Electro-Hydraulic Hitch



LV10559 –UN–15SEP04

1. Disconnect battery negative (—) cable.
2. Remove two screws (A) and console cover (B).
3. Disconnect wire connector (C).
4. Remove four screws (D) and rockshaft control module assembly (E).

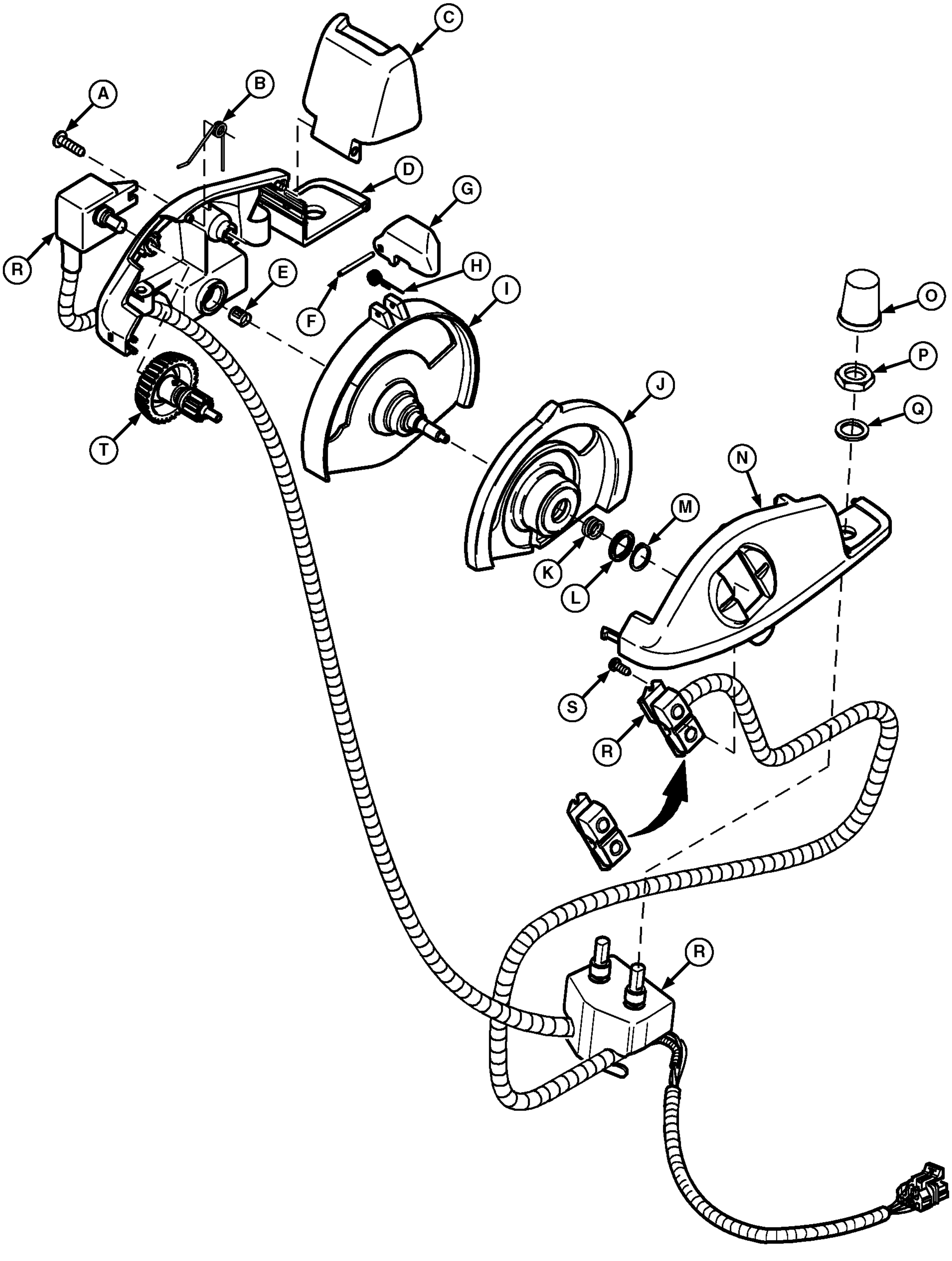
A—Screw (2 used)
B—Console Cover
C—Wire Connector
D—Screw (4 used)
E—Rockshaft Control Module Assembly



LV10572 –UN–20SEP04

Continued on next page

JG31785,0000194 –19–15NOV04–1/4


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
R
R
S
T

LV10629 –UN–20SEP04

Continued on next page

A—Screw
B—Spring
C—Cover
D—Housing
E—Clip
F—Spring Pin
G—Knob
H—Torsion Spring
I—Wheel, Right
J—Wheel, Left
K—Compression Spring
L—Washer
M—Snap Ring
N—Housing
O—Knob (2 used)
P—Nut (21 used)
Q—Washer (2 used)
R—Control Module
S—Screw (2 used)
T—Knob

5. Remove parts (A—T).

6. Install a new control module (R).

7. Assemble rockshaft control module.

Continued on next page

JG31785,0000194 –19–15NOV04–3/4

8. Install rockshaft control module assembly (E) on console using four screws (D).

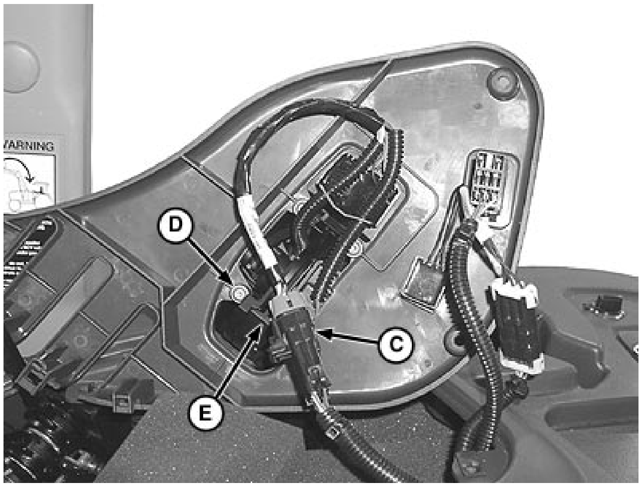
9. Connect wire connector (C).

10. Before installing console cover, position foam blocks (F) and wiring harnesses to prevent contact between harnesses and moving parts.

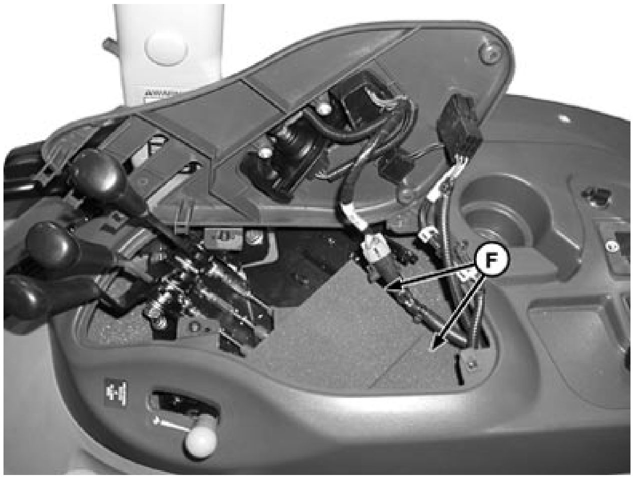
11. Install console cover (B) and screws (A).

12. Connect battery negative (—) cable.

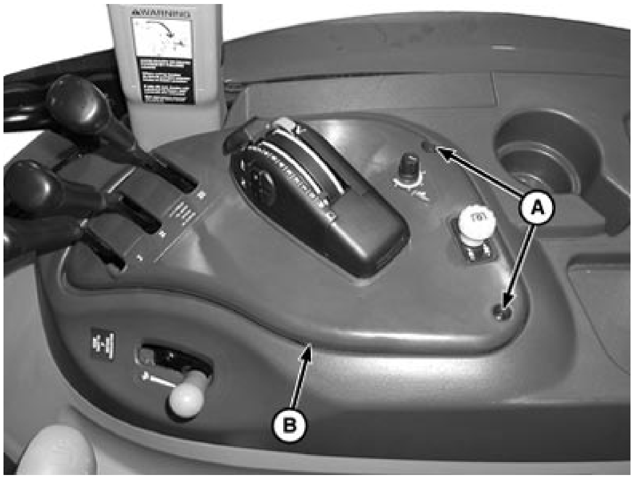
A—Screw (2 used)
B—Console Cover
C—Wire Connector
D—Screw (4 used)
E—Rockshaft Control Module Assembly
F—Foam Blocks



LV10572 –UN–20SEP04



LV10576 –UN–15SEP04



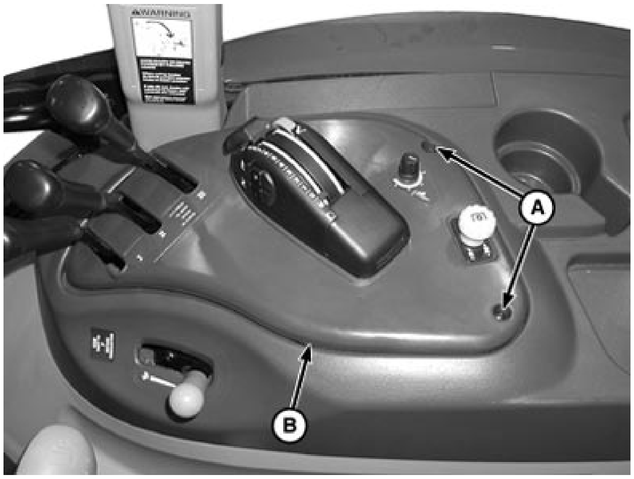
LV10559 –UN–15SEP04

JG31785,0000194 –19–15NOV04–4/4

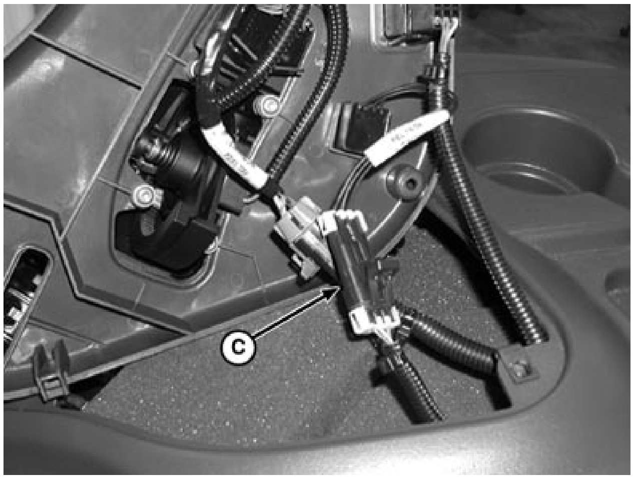
Replace Load Depth Control—Electro-Hydraulic Hitch

1. Disconnect battery negative (—) cable.
2. Remove two screws (A) and console cover (B).
3. Disconnect wire connector (C).
4. Remove knob (D), nut and washer (E), and load depth control.
5. Install load depth control, washer and nut (E) and knob (D).
6. Connect wire connector (C).

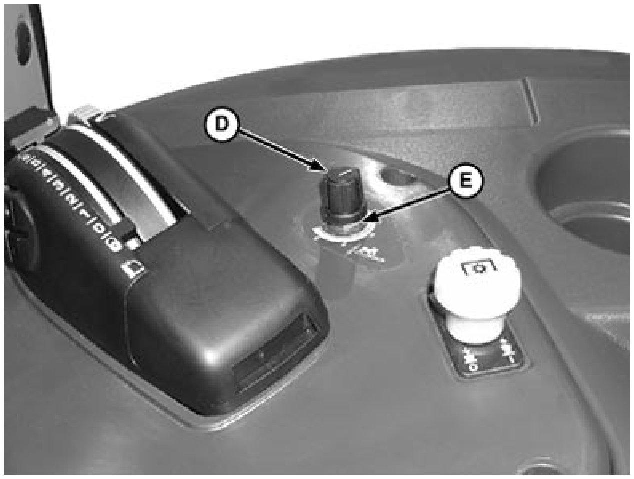
A—Screw (2 used)
B—Right Console Cover
C—Wire Connector
D—Knob
E—Nut and Washer



LV10559 –UN–15SEP04



LV10574 –UN–15SEP04



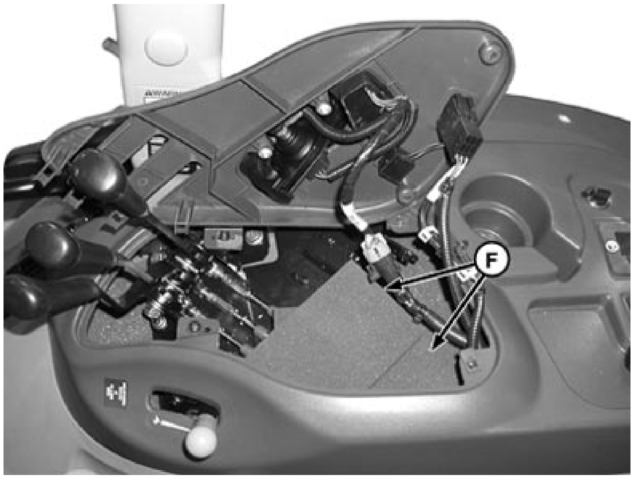
LV10575 –UN–15SEP04

Continued on next page

JG31785,0000195 –19–15NOV04–1/3

7. Before installing console cover, position foam blocks (F) and wiring harnesses to prevent contact between harnesses and moving parts.

F—Foam Blocks



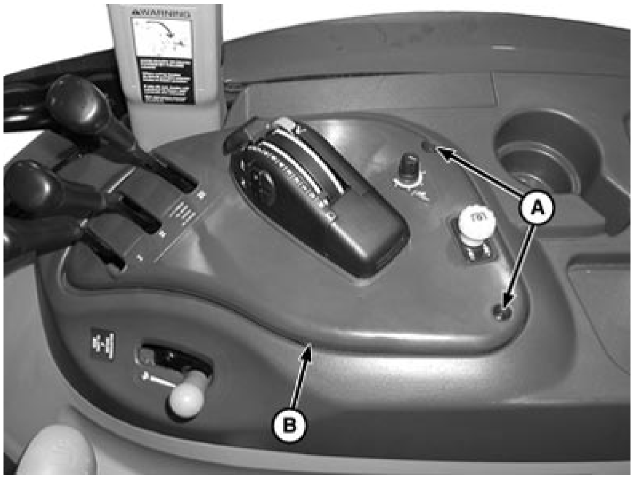
LV10576 –UN–15SEP04

JG31785,0000195 –19–15NOV04–2/3

8. Install console cover (B) and screws (A).

9. Connect battery negative (—) cable.

A—Screw (2 used)
B—Right Console Cover



LV10559 –UN–15SEP04

JG31785,0000195 –19–15NOV04–3/3

Replace Neutral Start Switch—Straddle Mount—SYNCSHUTTLE™ Transmission

NOTE: Neutral start switch is located on the side of transmission just below gear and range shift tower.

1. Remove right-side control console. (See Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)

2. Disconnect wire connector (B).

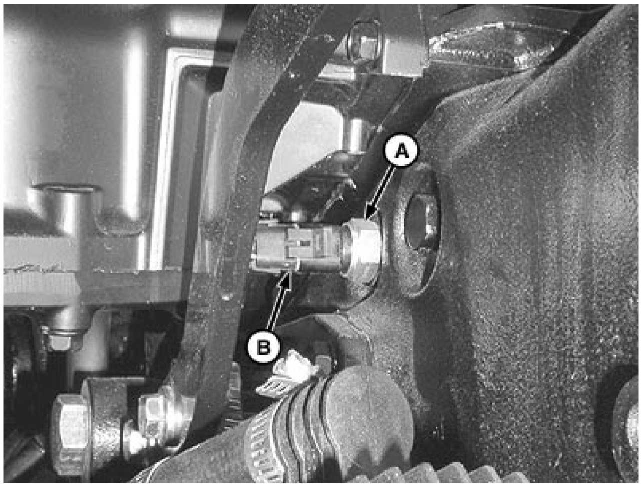
3. Replace neutral start switch and O-ring (A). Tighten to specification.

Specification

Neutral Start Switch—Torque... 50 N•m (37 lb-ft)

4. Connect wire connector (B).

5. Install right-side control console. (See Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)



A—Neutral Start Switch and O-Ring
B—Wire Connector

SYNCSHUTTLE is a trademark of Deere & Company

JG31785,0000196 –19–15NOV04–1/1

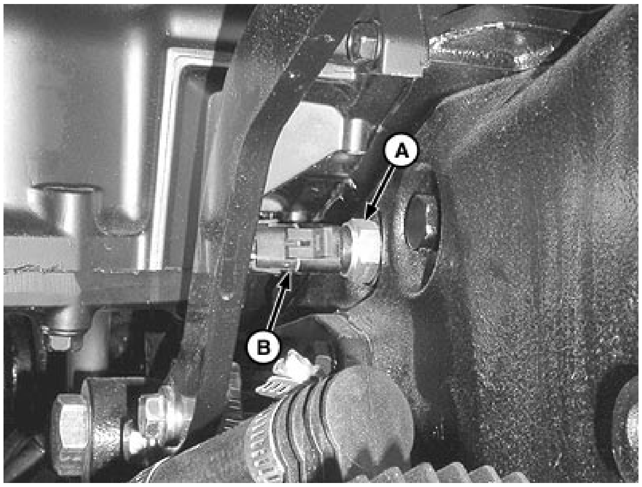
Replace Neutral Start Switch—Isolated Open Operator Station and Cab Tractors—SYNCSHUTTLE™ Transmissions

NOTE: Neutral start switch is located on side of transmission just below gear and range shift tower.

1. Disconnect wire connector (B).

2. Replace neutral start switch and O-ring (A).

3. Connect wire connector (B).

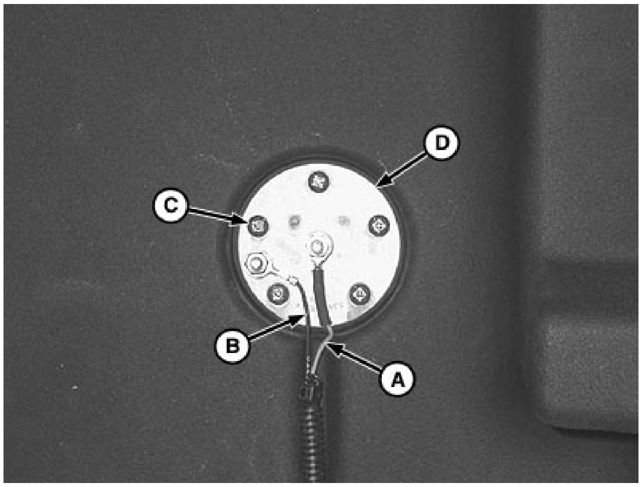


A—Neutral Start Switch and O-Ring
B—Wire Connector

SYNCSHUTTLE is a trademark of Deere & Company

JG31785,0000197 –19–15NOV04–1/1

Replace Fuel Level Sender—Straddle Mount



LV10155 –UN–01SEP04

A—Orange Wire Lead
B—Black Wire Lead
C—Screw (5 used)
D—Fuel Level Sender and Gasket

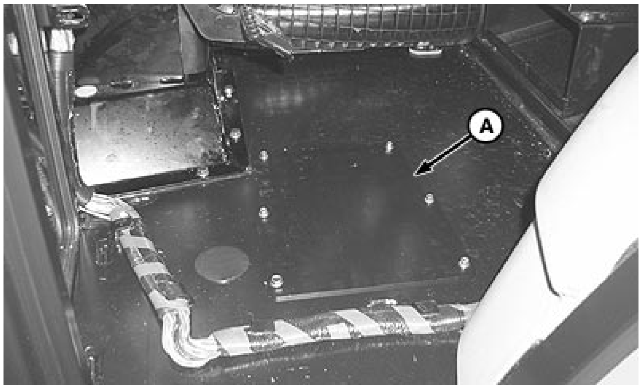
1. Remove seat and support. (See Remove and Install Seat and Support—Straddle Mount in Section 90, Group 05.)
2. Drain fuel from tank until fuel level is below fuel level sender base.
3. Disconnect orange wire lead (A) and black wire lead (B).
4. Remove screws (C).
5. Replace fuel level sender and gasket (D).
6. Install screws (C).
7. Connect black wire lead (A) and orange wire lead (B).
8. Install seat and support. (See Remove and Install Seat and Support—Straddle Mount in Section 90, Group 05.)
9. Fill fuel tank with fuel.

JG31785,0000198 –19–15NOV04–1/1

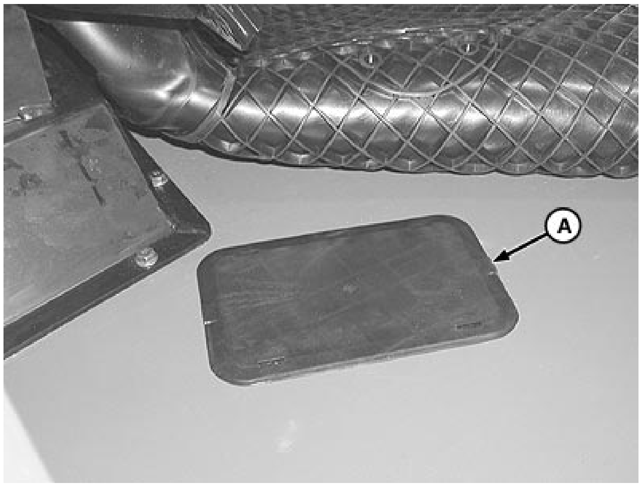
Replace Fuel Level Sender—Isolated Open Operator Station and Cab Tractors

1. Move left side of floor mat aside.
2. Remove access cover (A).
3. Disconnect black wire lead (B) and orange wire lead (C).
4. Remove screws (D).
5. Replace fuel level sender and gasket.
6. Install screws (D).
7. Connect orange wire lead (C) and black wire lead (B).
8. Install access cover (A) and place floor mat back over left side of floor.

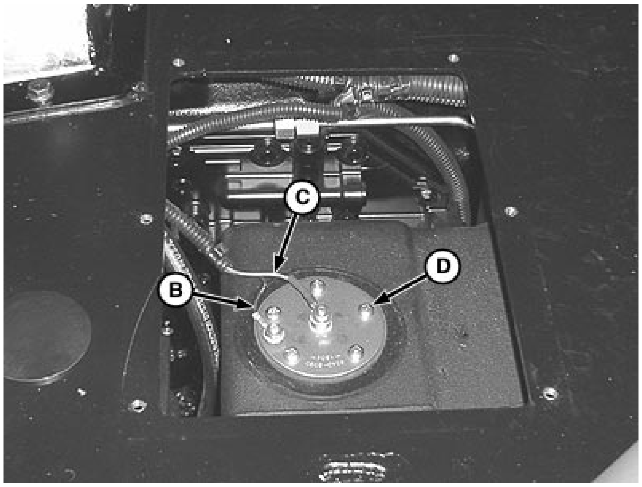
A—Access Cover
B—Black Wire Lead
C—Orange Wire Lead
D—Screw (5 used)



Sender Access Cover—Cab

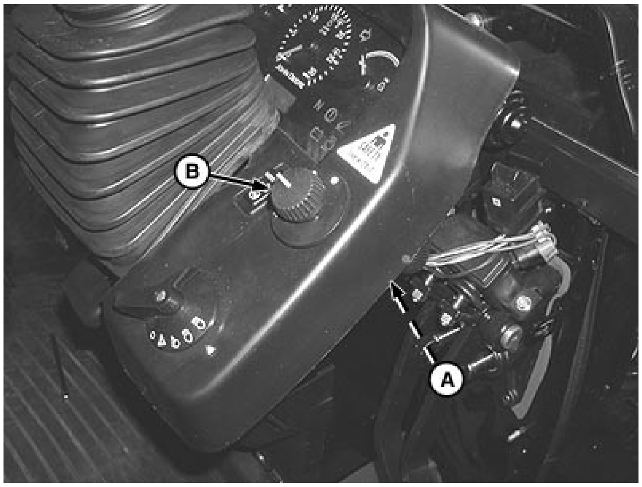


Sender Access Cover—Isolated Open Operator Station

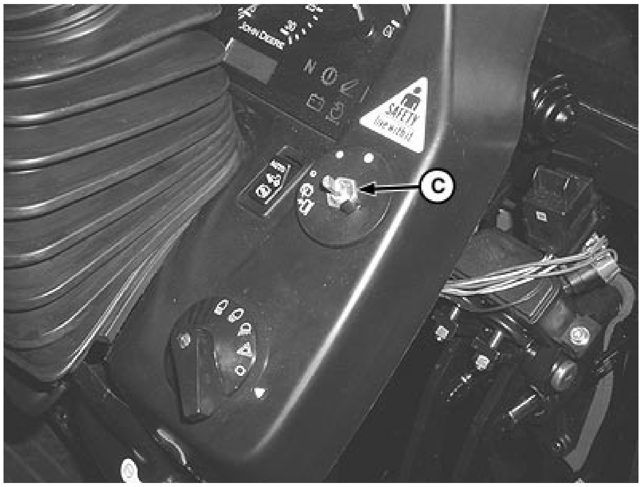


JG31785,0000199 –19–15NOV04–1/1

Replace Wiper Control Switch—5225, 5325, 5425, 5525 and 5625



LV10156 –UN–01SEP04



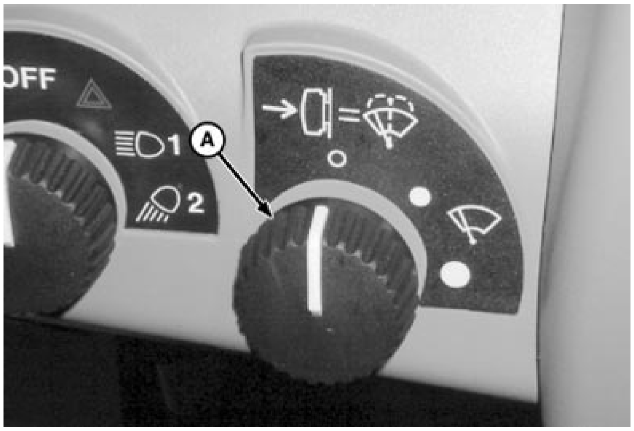
LV10157 –UN–01SEP04

1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Disconnect electrical connector (A).
4. Remove wiper switch knob (B) and nut (C).
5. Replace wiper control switch.
6. Install nut (C) and wiper switch knob (B).
7. Connect electrical connector (A).
8. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
9. Connect battery negative (—) cable.

A—Electrical Connector
B—Wiper Switch Knob
C—Nut

JG31785,000019A –19–12DEC06–1/1

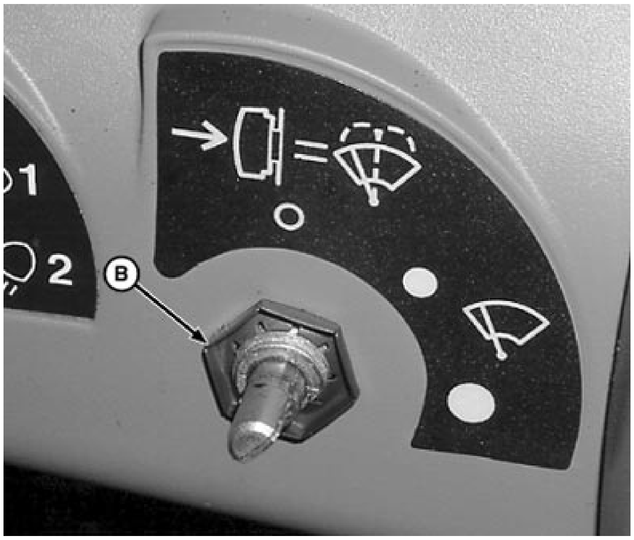
Replace Wiper Control Switch—5603



LV12936 –UN–14DEC06

1. Disconnect battery negative (—) cable.
2. Disconnect electrical connector on back of switch.
3. Remove wiper switch knob (A) and nut (B).
4. Replace wiper control switch.
5. Install nut (B) and wiper switch knob (A).
6. Connect electrical connector.

A—Wiper Switch Knob
B—Nut



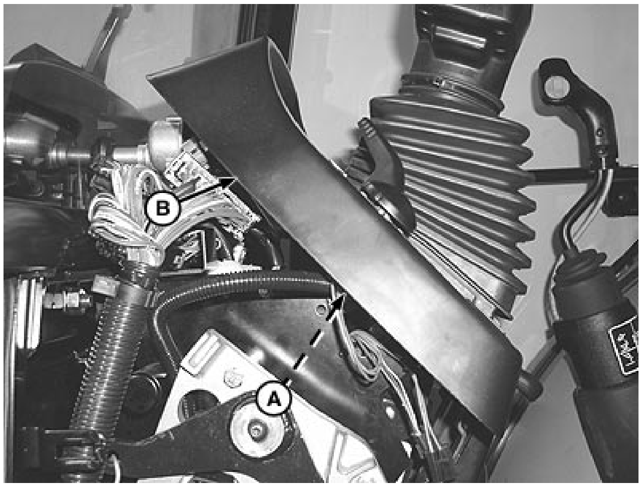
LV12937 –UN–14DEC06

OUO1023,0002A7A –19–12DEC06–1/1

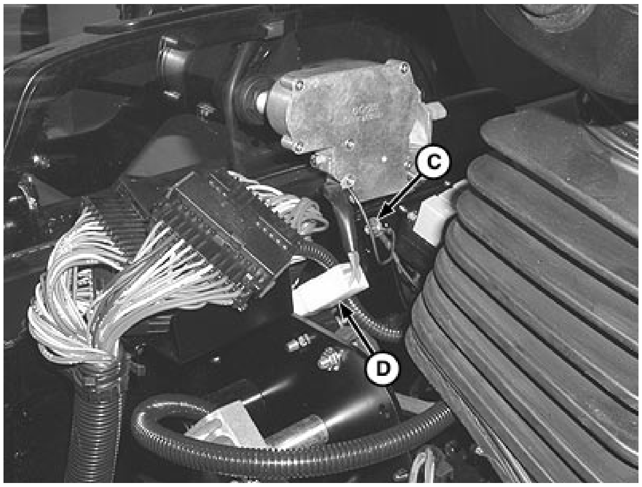
Replace Wiper Motor

1. Disconnect battery negative (—) cable.
2. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)
3. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
4. Disconnect the turn signal electrical connector (A) and move instrument panel (B) aside.
5. Disconnect ground wire (C) and electrical connector (D) from motor.
6. Pull back wiper cover (E).
7. Remove wiper mounting nut and washer (F) and wiper from motor shaft.

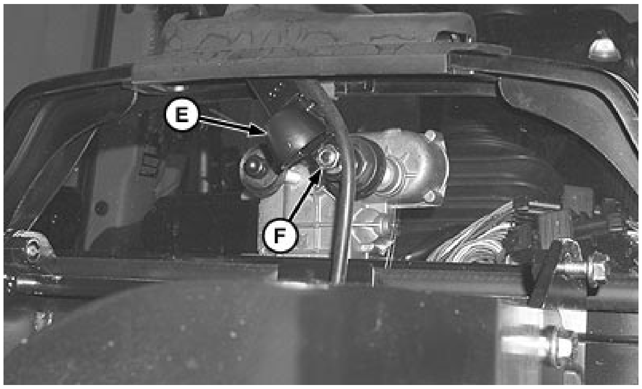
A—Turn Signal Electrical Connector
B—Instrument Panel
C—Ground Wire
D—Electrical Connector
E—Wiper Cover
F—Wiper Mounting Nut and Washer



LV10162 –UN–01SEP04



LV10163 –UN–01SEP04



LV10164 –UN–01SEP04

Continued on next page

JG31785,000019B –19–15NOV04–1/2

8. Remove nut (G), wiper motor shaft nut (H), cupped washer and rubber washer (I).

9. Remove nut (J), flat washer (K), plastic cupped washer (L), metal cupped washer and rubber washer (M).

NOTE: Wiper motor is not repairable.

10. Replace front wiper motor.

11. Install rubber washer and cupped washer (I), wiper motor shaft nut (H) and nut (G) on motor shaft.

12. Install rubber washer and metal cupped washer (M), plastic cupped washer (L), flat washer (K) and nut (J).

13. Install windshield wiper and mounting nut and washer (F).

14. Install wiper cover (E).

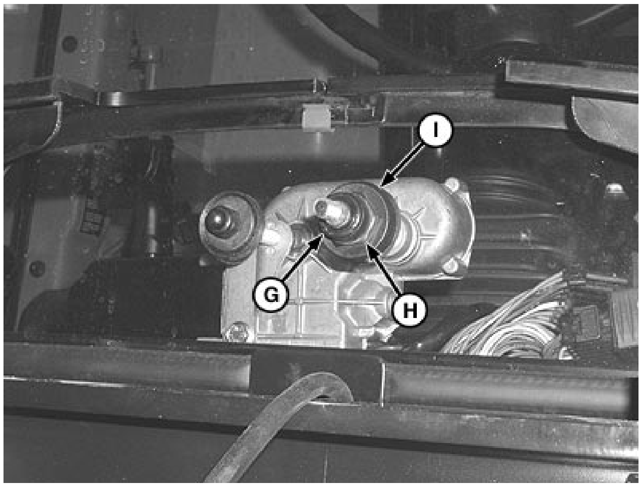
15. Connect ground wire (C) and electrical connector (D) to motor.

16. Move instrument panel back into position and connect the turn switch electrical connector (A).

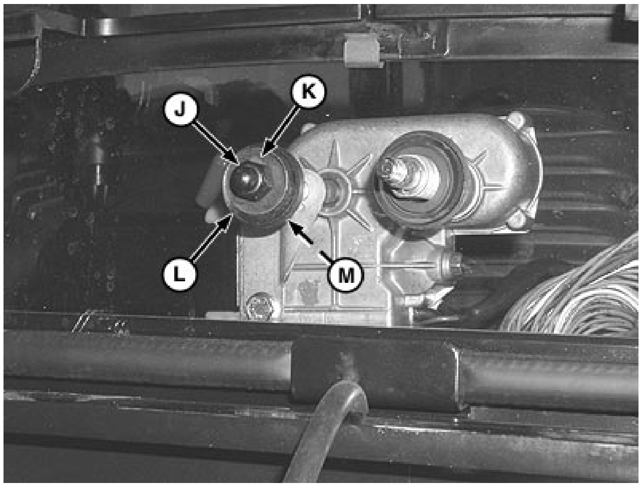
17. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

18. Install hood. (See Remove and Install Hood in Section 80, Group 25.)

19. Connect battery negative (—) cable.



LV10165 –UN–01SEP04

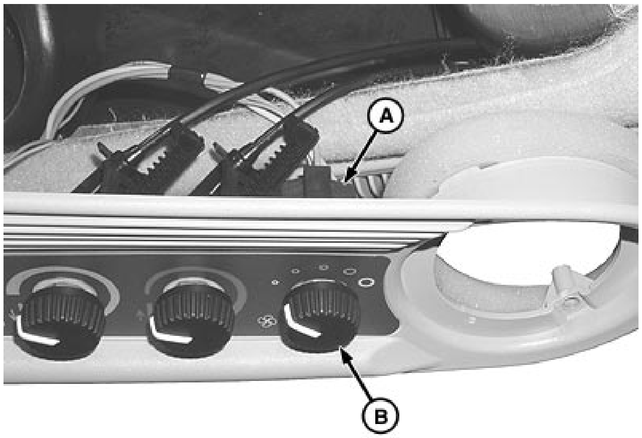


LV10166 –UN–01SEP04

G—Nut
H—Wiper Motor Shaft Nut
I—Cupped Washer and Rubber Washer
J—Nut
K—Flat Washer
L—Plastic Cupped Washer
M—Metal Cupped Washer and Rubber Washer

JG31785,000019B –19–15NOV04–2/2

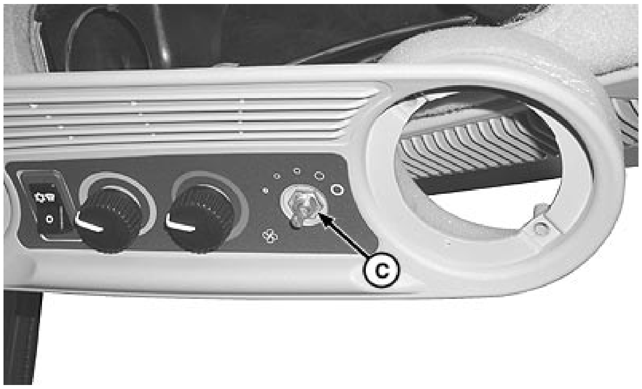
Replace Blower Control Switch



LV10158 –UN–01SEP04

1. Remove cab control panel from cab liner.
2. Disconnect electrical connector (A).
3. Remove blower control knob (B) and nut (C).
4. Replace blower switch.
5. Install nut (C) and blower control knob (B).
6. Connect electrical connector (A).
7. Install cab control panel.

A—Electrical Connector
B—Blower Switch Knob
C—Nut

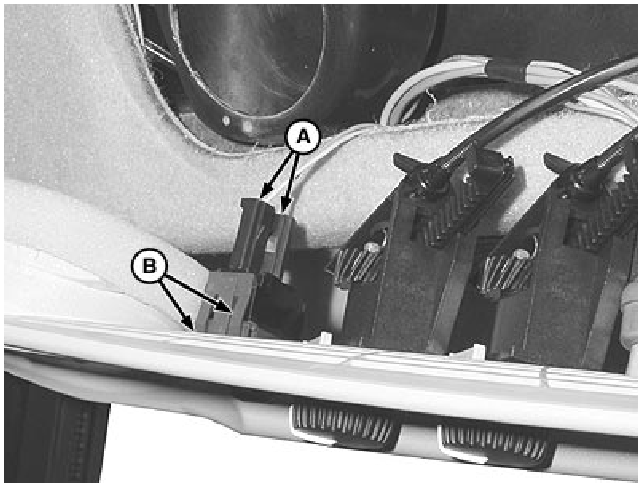


LV10159 –UN–01SEP04

JG31785,000019C –19–15NOV04–1/1

Replace A/C On/Off Switch

1. Remove cab control panel from cab liner.
2. Disconnect wire leads (A).
3. Remove A/C ON/OFF switch from cab control panel by pressing in on spring-loaded tabs (B) on both sides of switch.
4. Install A/C ON/OFF switch into panel.
5. Connect wire leads (A).
6. Install cab control panel.

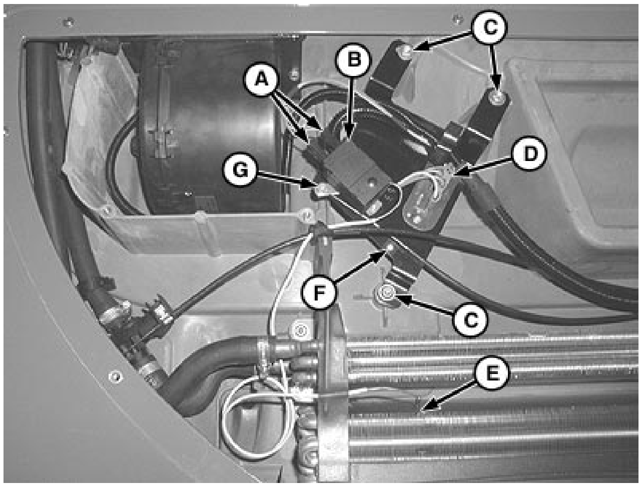


LV10160 –UN–01SEP04

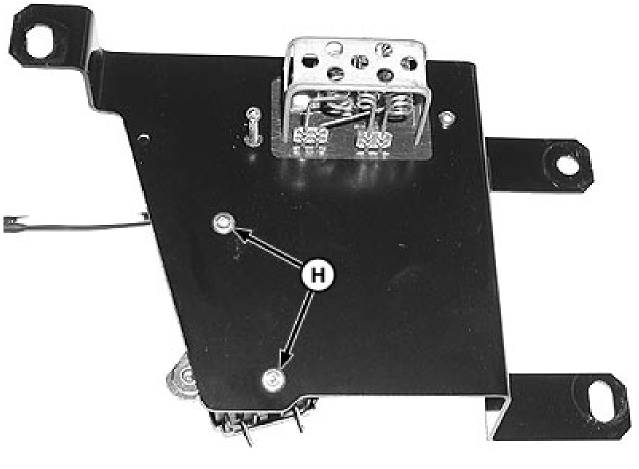
A—Wire Leads
B—Tabs

JG31785,000019D –19–15NOV04–1/1

Replace A/C Temperature Control Switch



LV8754 –UN–25AUG03



LV8757 –UN–25AUG03

1. Remove HVAC housing cover from top of cab to access temperature control switch.
2. Remove blower motor resistor connector (D).
3. Remove clamp (F).
4. Loosen screw (G) and remove cable from temperature control switch.
5. Pull capillary sensing tube (E) out of evaporator core.
6. Disconnect wire leads (A).
7. Remove mounting bracket cap screws (C) and mounting bracket with A/C temperature control switch (B).
8. Remove rivets (H).
9. Replace A/C temperature control switch (B) and secure with new rivets.
10. Install mounting bracket and cap screws (C).
11. Install capillary sensing tube (E) into the center of the evaporator core.
12. Install cable and clamp (F).

A—Wire Lead (2 used)
B—A/C Temperature Control Switch
C—Cap Screw (3 used)
D—Blower Motor Resistor Connector
E—Capillary Sensing Tube
F—Clamp
G—Screw
H—Rivet (2 used)

Continued on next page

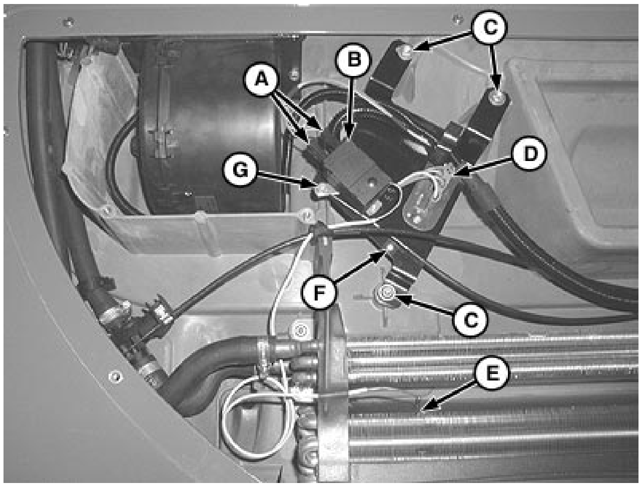
JG31785,000019E –19–15NOV04–1/2

13. Attach cable to temperature control switch and adjust temperature control switch. (See Reference 290-15-008, Adjust A/C Temperature Control Switch in TM2097 Section 290, Group 15.)

14. Connect wire leads (A).

15. Install blower motor resistor connector (D).

16. Place HVAC housing cover on cab roof and secure with screws.



A—Wire Lead (2 used)
B—A/C Temperature Control Switch
C—Cap Screw (3 used)
D—Blower Motor Resistor Connector
E—Capillary Sensing Tube
F—Clamp
G—Screw

JG31785,000019E –19–15NOV04–2/2

Replace Blower Motor Resistor

1. Disconnect battery, negative (—) cable first.

2. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

3. Disconnect wire connector (A).

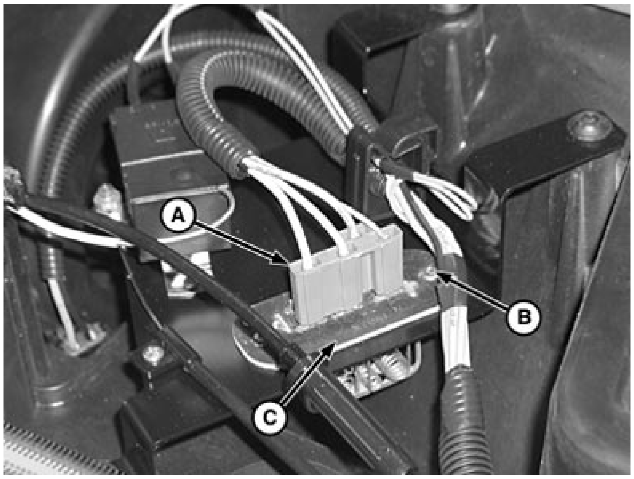
4. Remove rivets (B) and resistor assembly (C).

5. Install new resistor assembly (C) and rivets (B).

6. Connect wire connector (A).

7. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

8. Connect battery, negative (—) cable last.



A—Wire Connector
B—Rivet (2 used)
C—Resistor Assembly

JG31785,0000418 –19–02MAR05–1/1

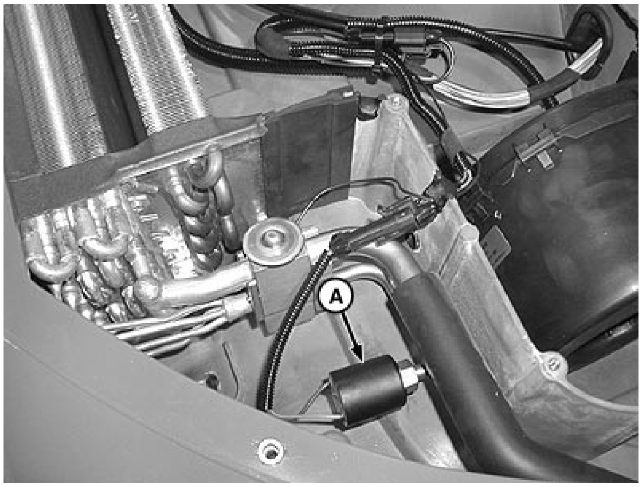
Replace Air Conditioning High/Low Pressure Switch

1. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

2. Disconnect wire connector and remove A/C high/low pressure switch (A).

3. Install new A/C high/low pressure switch (A) and connect wire connector.

4. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)



LV8686 –UN–18AUG03

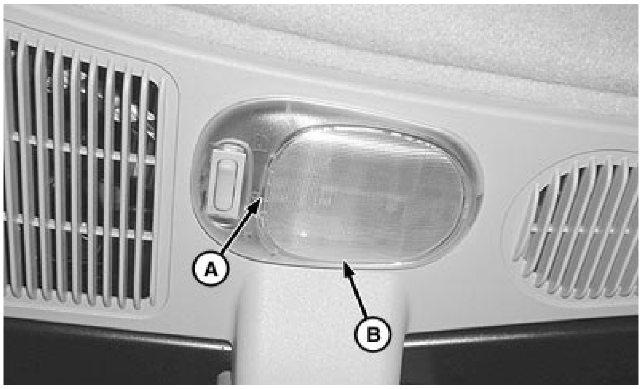
A—A/C High/Low Pressure Switch

JG31785,000040D –19–16FEB05–1/1

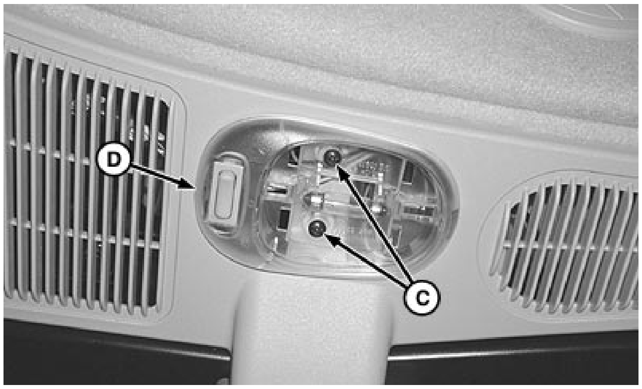
Replace Dome Light

1. Disconnect battery negative (—) cable.
2. Push in at the switch end of dome light lens (A), and remove lens (B).
3. Remove screws (C).
4. Pull on switch end of dome light (D) to release from dome light panel.
5. Disconnect electrical connector (E).
6. Connect new dome light electrical connector (E).
7. Position new dome light and snap into place.
8. Install screws (C).
9. Install dome light lens (B).
10. Connect battery negative (—) cable.

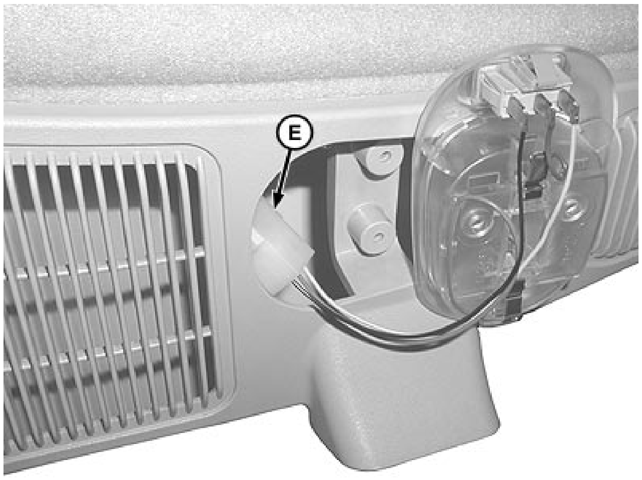
A—Switch End of Dome Light Lens
B—Lens
C—Screws
D—Switch End of Dome Light
E—Electrical Connector



LV10128 –UN–01SEP04



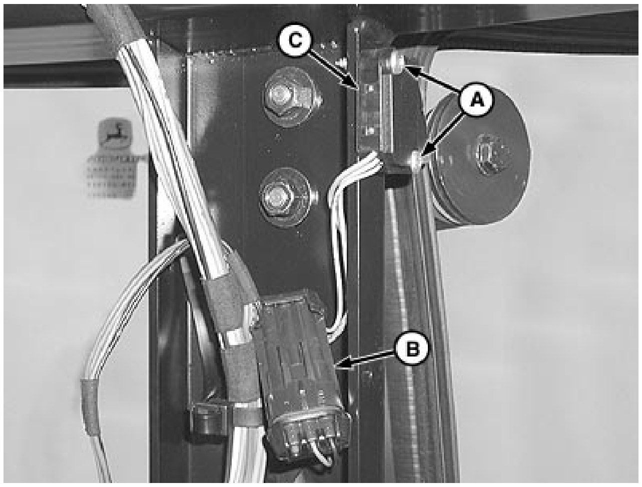
LV10129 –UN–01SEP04



LV10130 –UN–01SEP04

JG31785,000019F –19–15NOV04–1/1

Replace Door Switch



LV8703 –UN–25AUG03

1. Disconnect battery negative (—) cable

NOTE: The door switch is located at the upper end of the center cab support on left side of cab.

2. Remove center cab support cover.
3. Disconnect wire connector (B).
4. Remove screws (A) and switch (C).
5. Install new switch (C) and screws (A).
6. Connect wire connector (B).
7. Install center cab support cover.

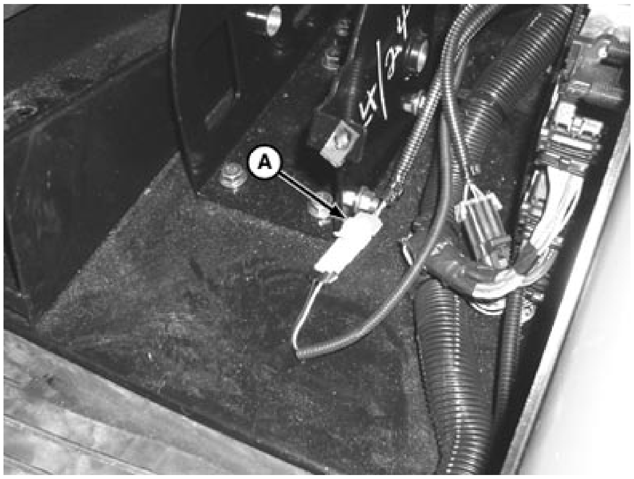
A—Screw (2 used)
B—Wire Connector
C—Switch

JG31785,00001A1 –19–15NOV04–1/1

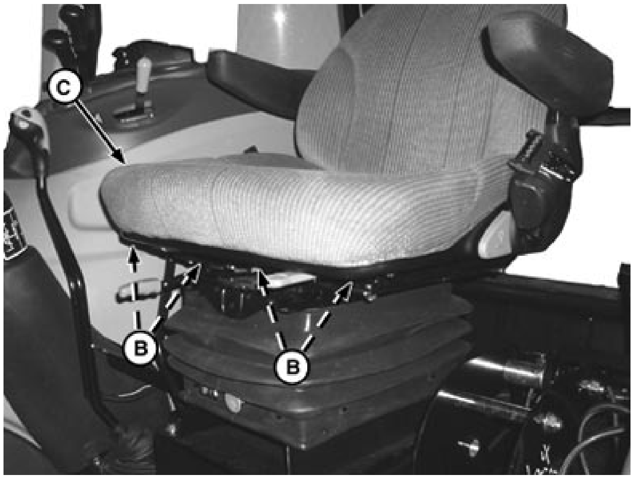
Replace Seat Switch—Isolated Open Operator Station and Cab Tractors

1. Disconnect battery negative (—) cable.
2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors in Section 90, Group 06.)
3. Disconnect wire connector (A).
4. Fold four tabs (B) down and rotate to align with the slots in the seat pan.
5. Remove seat cushion (C).
6. Cut wire ties (D).
7. Replace seat switch (E).
8. Route wiring harness (F) through the seat base.
9. Install wire ties (D) as needed.
10. Install seat cushion (C).
11. Rotate tabs (B) 1/4 turn and fold against the seat pan.
12. Connect wire connector (A).
13. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
14. Connect battery negative (—) cable.

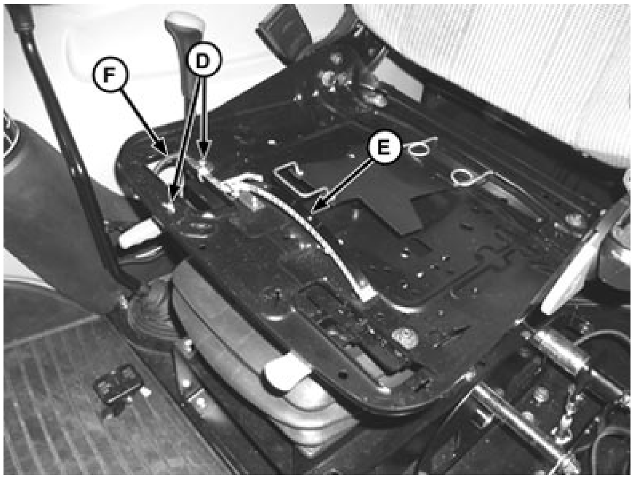
A—Wire Connector
B—Tab (4 used)
C—Seat Cushion
D—Wire Ties
E—Seat Switch
F—Wiring Harness



LV11084 –UN–14OCT04



LV11085 –UN–14OCT04



LV11086 –UN–14OCT04

Replace Seat Switch—Straddle Mount Tractors

1. Remove seat assembly. (See Remove and Install Seat and Support—Straddle Mount in Section 90, Group 05.)

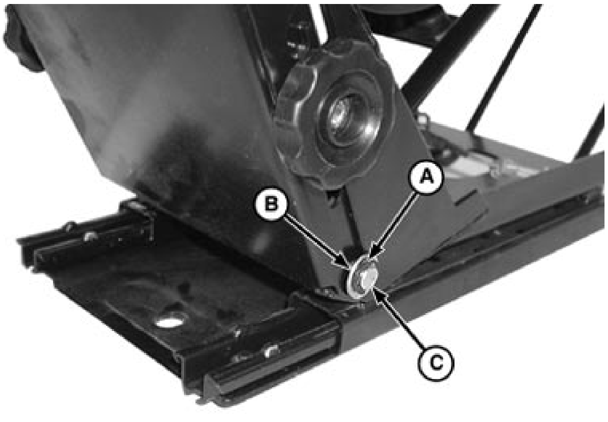
2. Remove retaining clip (A), washer (B) and shaft (C).

3. Remove knobs (D), washers and round head bolts from both sides of the seat.

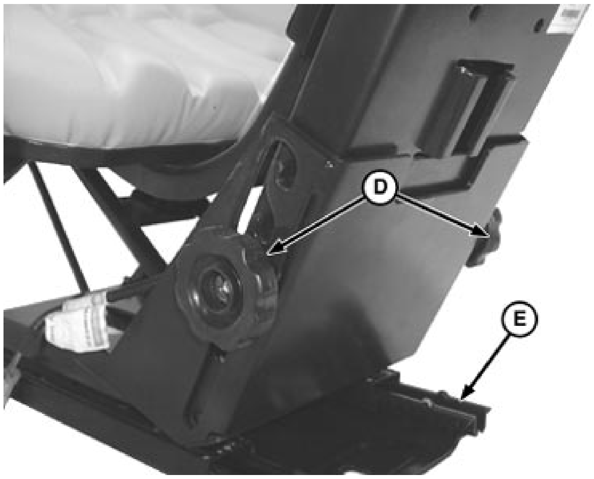
4. Remove seat base (E).

5. Remove two screws (F) and cover (G).

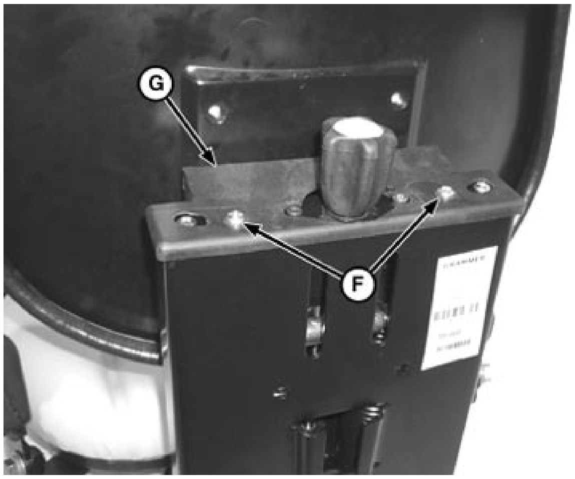
A—Retaining Clip
B—Washer
C—Shaft
D—Knob (2 used)
E—Seat Base
F—Screw (2 used)
G—Cover



LV11182 –UN–14OCT04



LV11183 –UN–14OCT04



LV11184 –UN–14OCT04

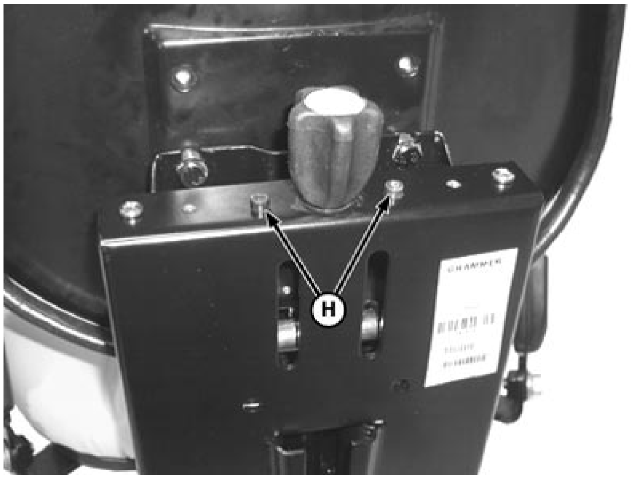
Continued on next page

JG31785,00001A3 –19–15NOV04–1/4

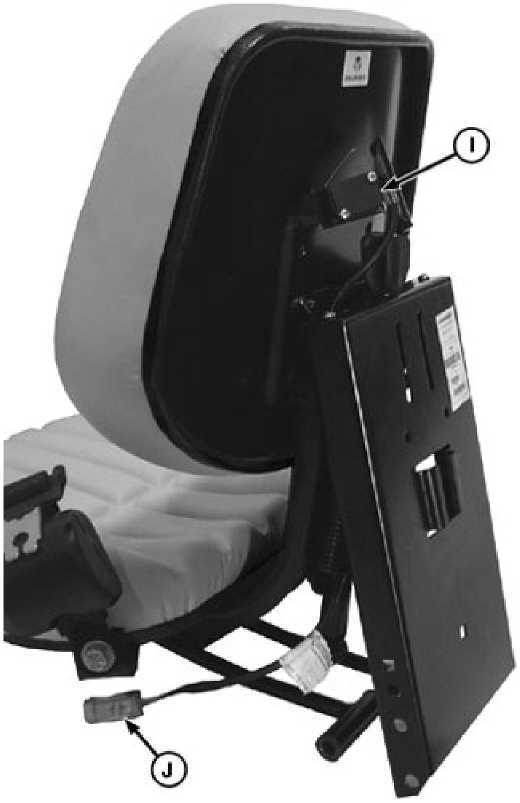
6. Remove two socket-head screws (H).

7. Remove switch bracket assembly (I). Route the wire connector (J) through the seat spring.

H—Screw (2 used)
I—Switch Bracket Assembly
J—Wire Connector



LV11185 –UN–14OCT04



LV11186 –UN–14OCT04

Continued on next page JG31785,00001A3 –19–15NOV04–2/4

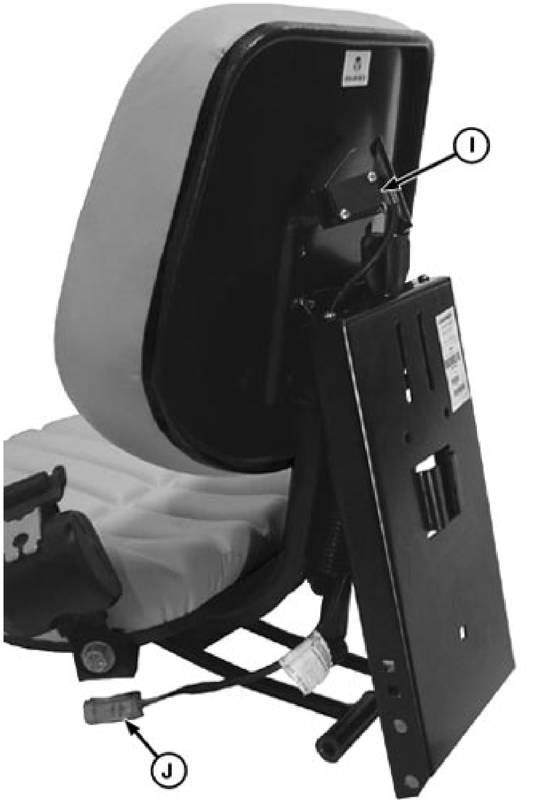
8. Remove two screws (K) and switch (L) from bracket (M).

9. Install new switch (L) on bracket (M) with two screws (K).

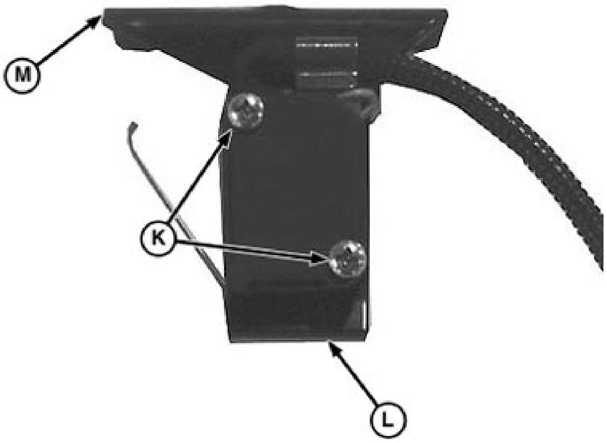
10. Install switch bracket assembly (I) in the seat support. Route the wire connector (J) through the seat spring.

11. Secure the switch bracket assembly to the seat support with two screws (H).

I—Switch Bracket Assembly
J—Wire Connector
K—Screw (2 used)
L—Switch
M—Bracket



LV11186 –UN–14OCT04



LV11187 –UN–14OCT04

Continued on next page

JG31785,00001A3 –19–15NOV04–3/4

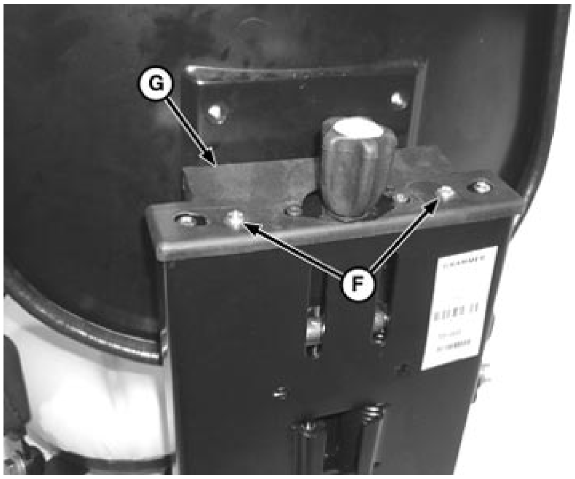
12. Install cover (G) to the seat support using two screws (F).

13. Install seat base (E) using two round head bolts, washer and knobs (D).

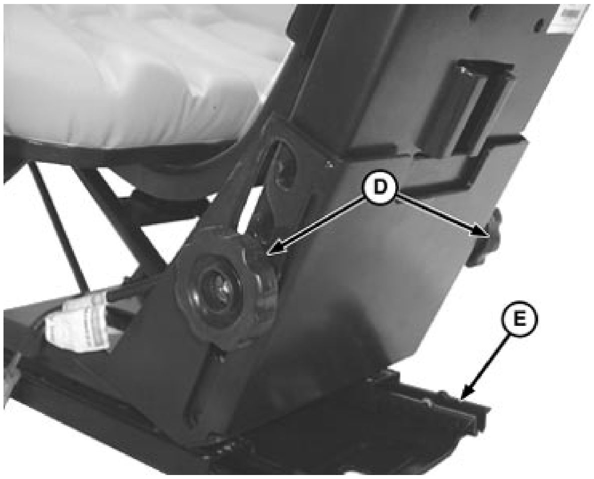
14. Align the end of the torsional damper and the ends of the seat arm with the holes in the seat support, and install shaft (C), washer (B) and retaining clip (A).

15. Install seat assembly. (See Remove and Install Seat and Support—Straddle Mount in Section 90, Group 05.)

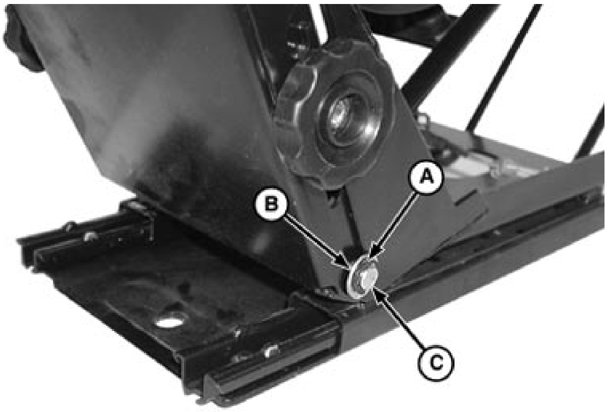
A—Retaining Clip
B—Washer
C—Shaft
D—Knob (2 used)
E—Seat Base
F—Screw (2 used)
G—Cover



LV11184 –UN–14OCT04



LV11183 –UN–14OCT04



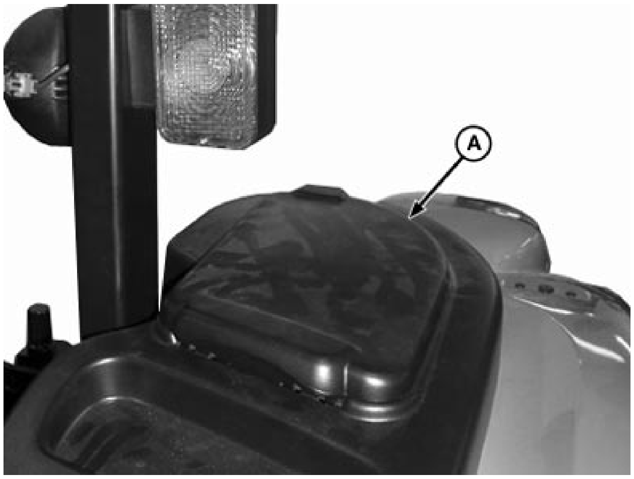
LV11182 –UN–14OCT04

JG31785,00001A3 –19–15NOV04–4/4

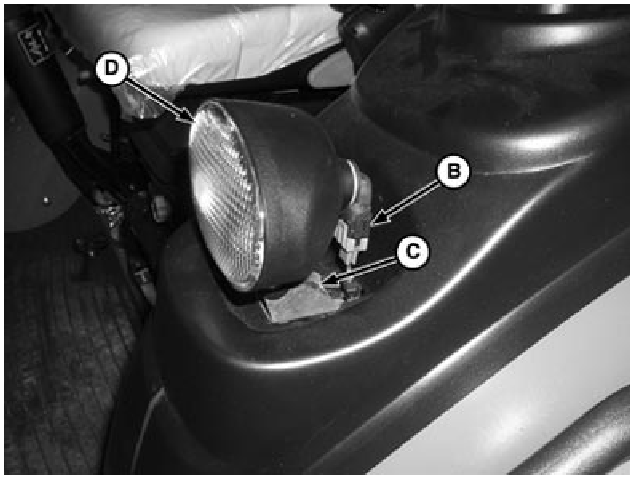
Replace VEC Load Center—Isolated Open Operator Station

1. Disconnect battery negative (—) cable.
2. Remove cover (A).
3. Disconnect wire connector (B).
4. Remove cap screw (C) and lamp (D).

A—Cover
B—Wire Connector
C—Cap Screw
D—Lamp



LV11080 –UN–14OCT04



LV11081 –UN–14OCT04

Continued on next page

JG31785,00001A4 –19–15NOV04–1/3

5. Remove screws (E—G) and cover (H).

6. Disconnect power leads (I and J).

7. Disconnect wire connectors (K—N).

8. Remove three screws (O).

9. Remove VEC electrical load center (P).

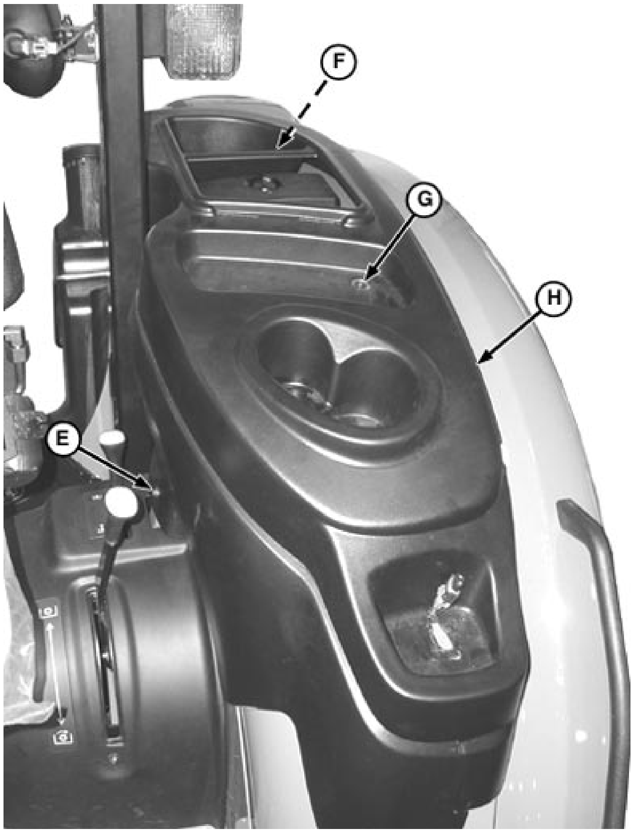
10. Install new VEC electrical load center (P) with three screws (O).

11. Connect wire connectors (K—N).

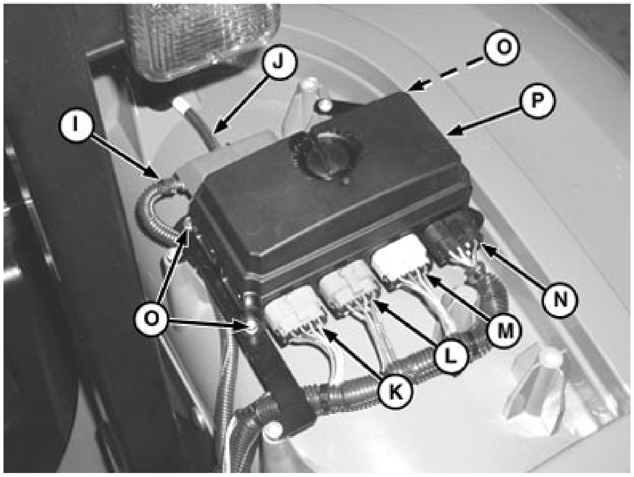
12. Connect power leads (I and J).

13. Install cover (H) with screws (E—G).

E—Screw
F—Screw
G—Screw
H—Cover
I—Power Lead
J—Power Lead
K—Wire Connector (Green)
L—Wire Connector (Blue)
M—Wire Connector (Gray)
N—Wire Connector (Black)
O—Screw (3 used)
P—VEC Electrical Load Center



LV11082 –UN–14OCT04



LV11083 –UN–14OCT04

Continued on next page

JG31785,00001A4 –19–15NOV04–2/3

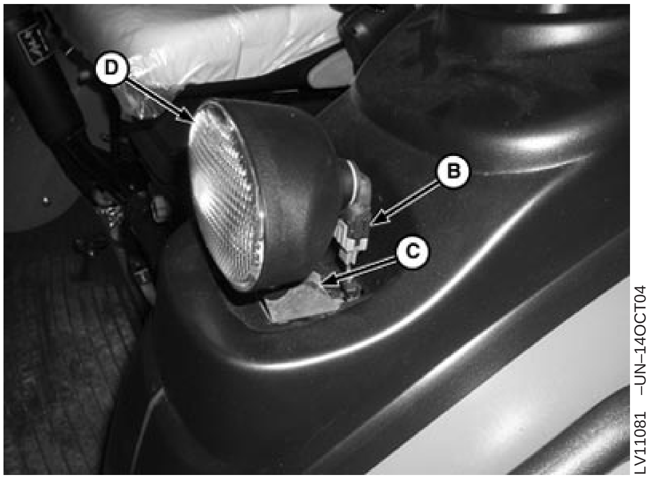
14. Install lamp (D) with cap screw (C).

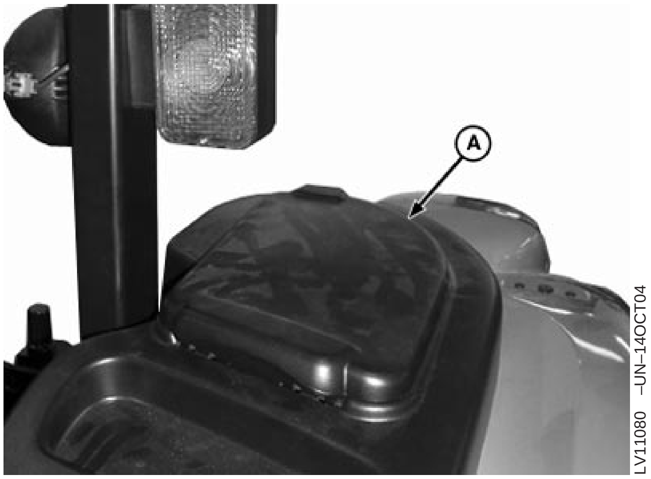
15. Connect wire connector (B).

16. Install cover (A).

17. Connect battery negative (—) cable.

A—Cover
B—Wire Connector
C—Cap Screw
D—Lamp


D
B
C
LV11081 –UN–14OCT04


A
LV11080 –UN–14OCT04

JG31785,00001A4 –19–15NOV04–3/3

Replace VEC Load Center—Cab Tractors

1. Disconnect battery negative (—) cable.

2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)

3. Disconnect power leads (A and B).

4. Disconnect wire connectors (C—F).

5. Remove three screws (G).

6. Remove VEC electrical load center (H).

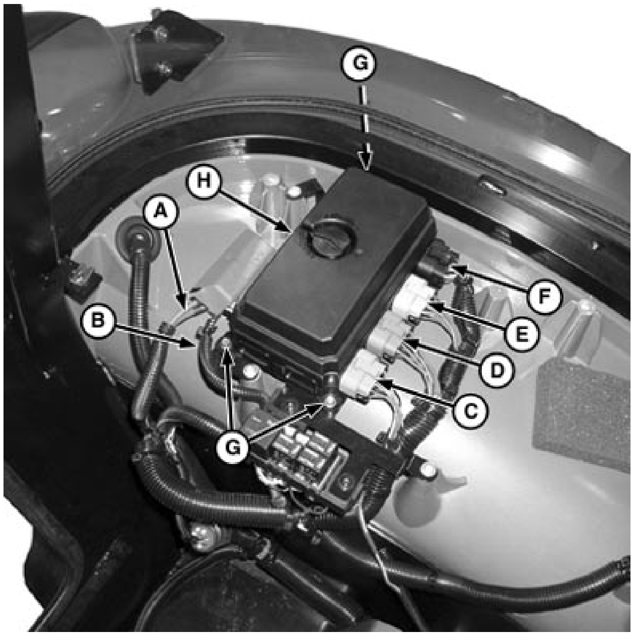
7. Install new VEC electrical load center (H) with three screws (G).

8. Connect wire connectors (C—F).

9. Connect power leads (A and B).

10. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)

11. Connect battery negative (—) cable.



LV11096 –UN–14OCT04

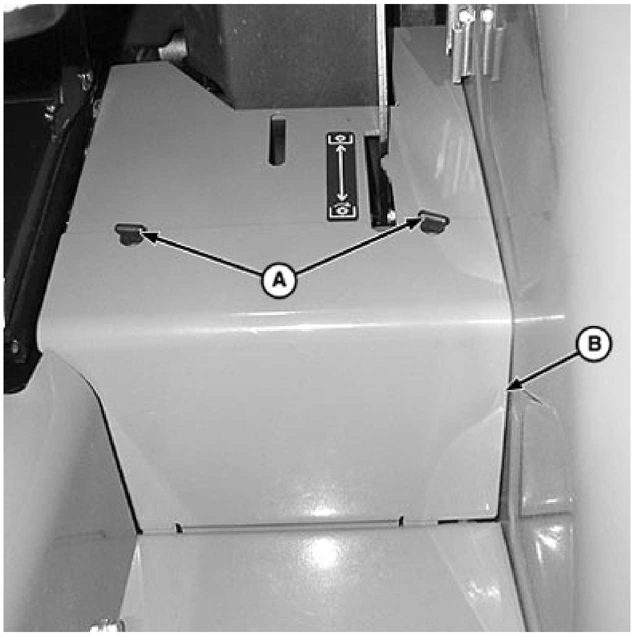
A—Power Lead
B—Power Lead
C—Wire Connector (Green)
D—Wire Connector (Blue)
E—Wire Connector (Gray)
F—Wire Connector (Black)
G—Screw (3 used)
H—VEC Electrical Load Center

JG31785,00001A5 –19–15NOV04–1/1

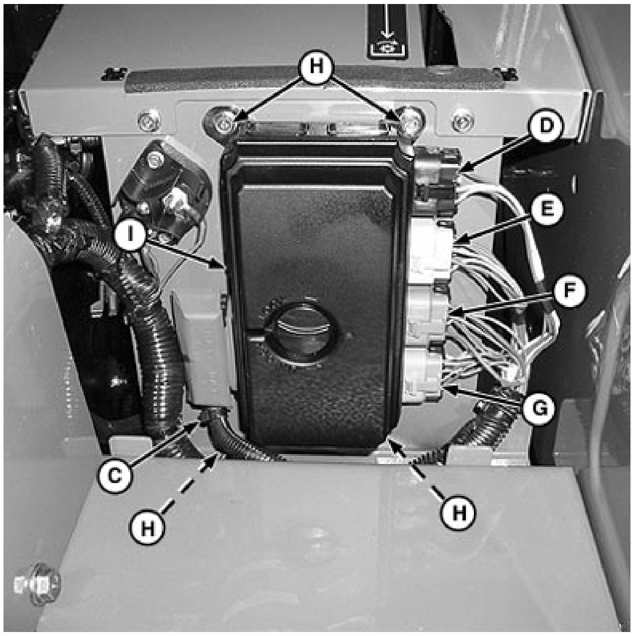
Replace VEC Load Center—Straddle Mount

1. Disconnect battery negative (—) cable.
2. Turn the latches (A) 90° and remove the cover (B).
3. Disconnect power lead (C).
4. Disconnect wire connectors (D—G).
5. Remove four screws and lock nuts (H) and VEC electrical load center (I).
6. Install new VEC electrical load center (I) with four screws and lock nuts (H).
7. Connect wire connectors (D—G).
8. Connect power lead (C).
9. Install cover (B).
10. Connect battery negative (—) cable.

A—Latches
B—Cover
C—Power Lead
D—Wire Connector (Black)
E—Wire Connector (Gray)
F—Wire Connector (Blue)
G—Wire Connector (Green)
H—Screw and Lock Nut (4 used)
I—VEC Electrical Load Center



LV11287 –UN–20OCT04



LV11288 –UN–20OCT04

JG31785,00001A6 –19–15NOV04–1/1

Replace Electro-Hydraulic Controller—5225, 5325, 5425, 5525 and 5625 IOOS and Cab Tractors

1. Disconnect battery negative (—) cable.

2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)

3. Disconnect wire connectors (A, B and C).

4. Remove upper and lower cap screws (D) and plastic washers (E).

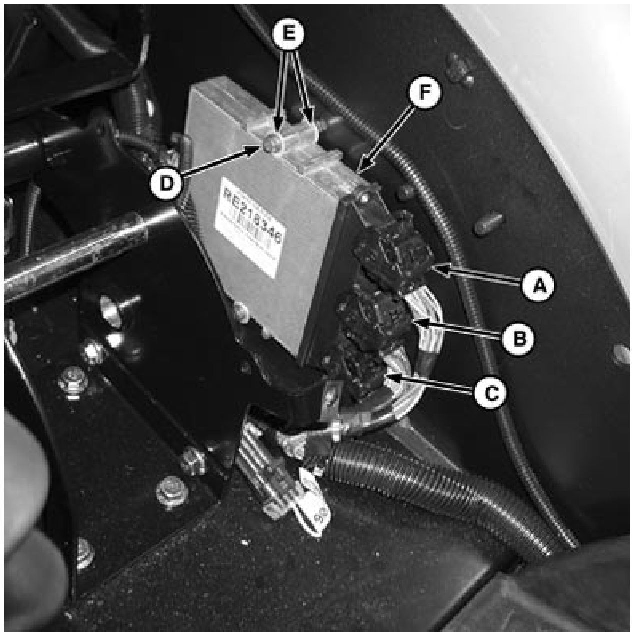
5. Remove electro-hydraulic controller (F).

6. Install new electro-hydraulic controller (F), with two cap screws (D) and four plastic washers (E). Place one plastic washer between the electro-hydraulic controller and the inner mounting nut, and one under the head of each cap screw.

7. Connect wire connectors (A, B and C).

8. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)

9. Connect battery negative (—) cable.

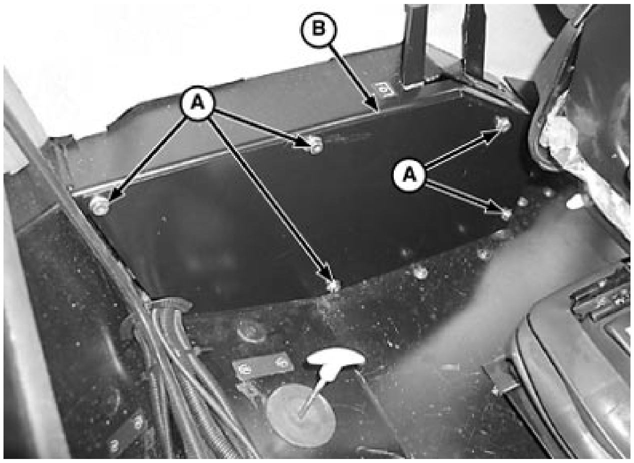


LV10636 –UN–22SEP04

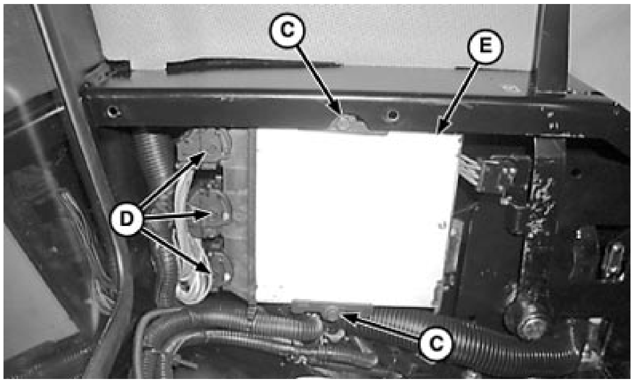
A—Wire Connector
B—Wire Connector
C—Wire Connector
D—Cap Screw (2 used)
E—Plastic Washer (4 used)
F—Electro-Hydraulic Controller

JG31785,00001A7 –19–13DEC06–1/1

Replace Electro-Hydraulic Controller—5603



LV12938 –UN–14DEC06



LV12939 –UN–14DEC06

1. Disconnect battery negative (—) cable.
2. Remove five cap screws (A) and access panel (B).
3. Disconnect wire connectors (D).
4. Remove upper and lower cap screws (C) and replace electro-hydraulic controller (E).
5. Install new electro-hydraulic controller (E) using cap screws (C).
6. Connect wire connectors (D).
7. Install access panel (B) and cap screws (A).
8. Connect battery negative (—) cable.

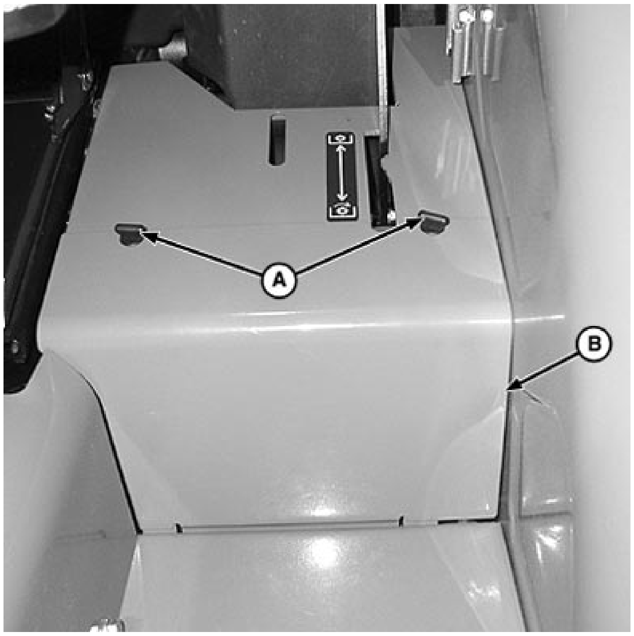
A—Cap Screw (5 used)
B—Access Panel
C—Cap Screw (2 used)
D—Harness Connectors
E—Electro-Hydraulic Controller

OUO1023,0002A7B –19–13DEC06–1/1

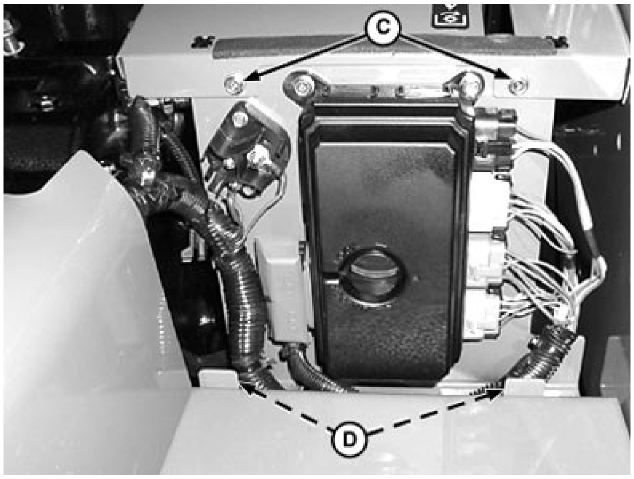
Replace Electro-Hydraulic Controller—Straddle Mount

1. Disconnect battery negative (—) cable.
2. Remove left-side fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)
3. Turn latches (A) and remove cover (B).
4. Remove cap screws and nuts (C and D). Turn electrical load center over to expose electro-hydraulic controller (J).
5. Disconnect wire connectors (E).
6. Remove cap screws and nuts (G), metal washers (H) and plastic washers (I).
7. Remove electro-hydraulic controller (J) and rubber isolator (F).
8. Install new electro-hydraulic controller (J) with rubber isolator (F), plastic washers (I), metal washers (H) and cap screws and nuts (G).
9. Connect wire connectors (E).
10. Install electrical load center with cap screws and nuts (C and D).
11. Install cover (B) and secure latches (A).
12. Install left-side fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)
13. Connect battery negative (—) cable.

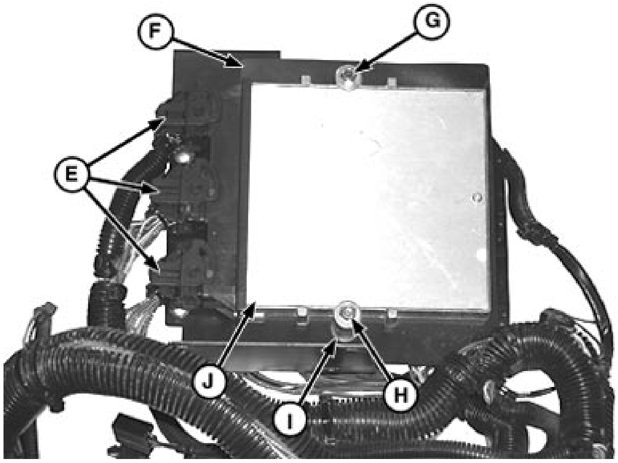
A—Latches
B—Cover
C—Cap Screw and Nut (2 used)
D—Cap Screw and Flange Nut (2 used)
E—Wire Connector (3 used)
F—Rubber Isolator
G—Cap Screw and Nut (2 used)
H—Metal Washer (2 used)
I—Plastic Washer (4 used)
J—Electro-Hydraulic Controller



LV11287 –UN–20OCT04



LV11909 –UN–08DEC04

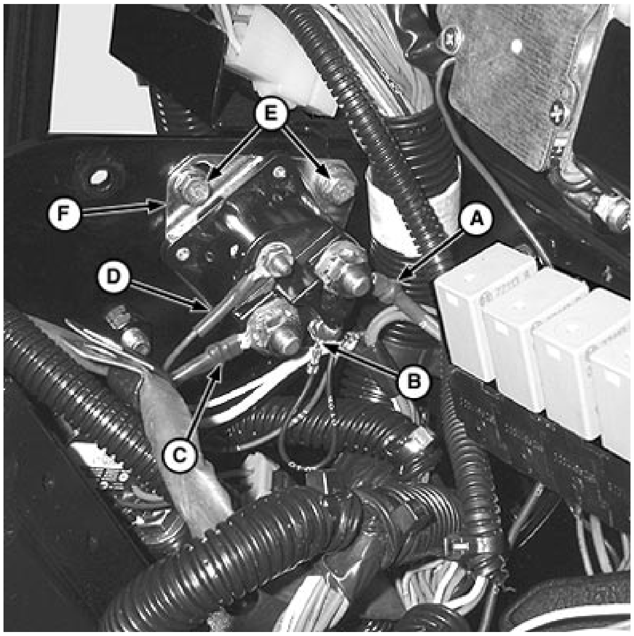


LV11910 –UN–08DEC04

JG31785,0000236 –19–06DEC04–1/1

Replace Start Relay

1. Disconnect battery negative (—) cable.
2. Remove instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors or Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)
3. Disconnect wires (A—D).
4. Remove two cap screws and nuts (E) and start relay (F).
5. Install new start relay (F) using two cap screws and nuts (E).
6. Connect wires (A—D).
7. Install instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors or Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)
8. Connect battery negative (—) cable.



LV11188 –UN–20OCT04

A—002 Red Wire
B—010 Black Wire
C—309 White Wire
D—311 Brown Wire
E—Cap Screw and Nut (2 used)
F—Start Relay

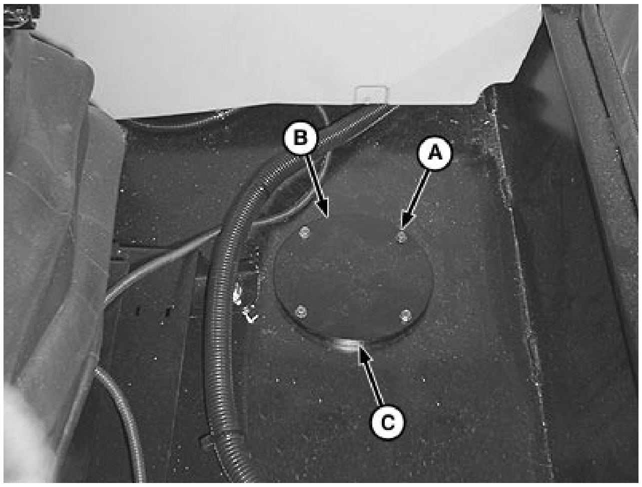
JG31785,00001A8 –19–15NOV04–1/1

Replace Hitch Solenoids—Isolated Open Operator Station and Cab Tractors With EH Hitch

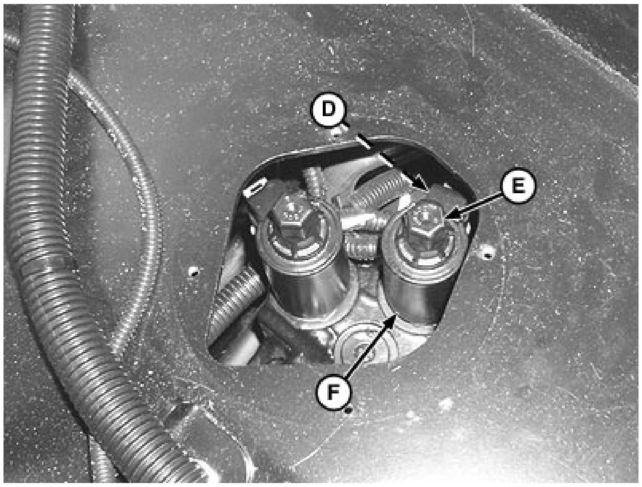
NOTE: The access plate is located behind the seat.

1. Disconnect battery negative (—) cable.
2. Remove four screws (A), access plate (B) and spacer (C).
3. Disconnect wire connector (D).
4. Remove nut (E) and solenoid coil (F).
5. Install solenoid coil (F) and nut (E).
6. Connect wire connector (D).
7. Install spacer (C) and access plate (B) with screws (A).
8. Connect battery negative (—) cable.

A—Screws (4 used)
B—Access Plate
C—Spacer
D—Wire Connector
E—Nut
F—Coil



LV10866 —UN–07OCT04



LV10867 —UN–07OCT04

JG31785,00001A9 –19–15NOV04–1/1

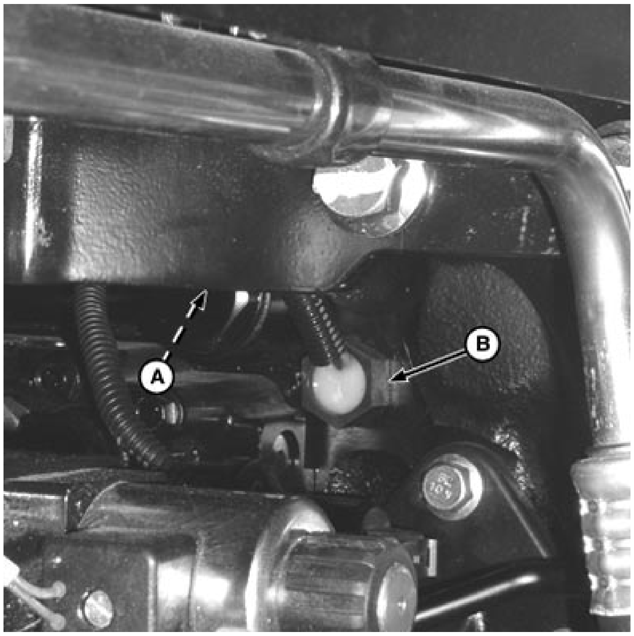
Replace Countershaft Speed Sensor—POWRREVERSER™ Tractors

NOTE: Countershaft speed sensor is located on the right side of the transmission.

1. Disconnect negative (—) battery cable.
2. Drain approximately 1—2 gallons of oil from the transmission/hydraulic system.
3. Disconnect wire connector (A) and remove countershaft speed sensor (B).

IMPORTANT: Countershaft speed sensor is plastic. Do not overtighten or sensor will be damaged.

4. Install a new countershaft speed sensor (B) and O-ring.
5. Connect wire connector (A).
6. Fill transmission/hydraulic system to the correct level.
7. Connect battery negative (—) cable.



LV10657 –UN–04OCT04

A—Wire Connector
B—Countershaft Speed Sensor

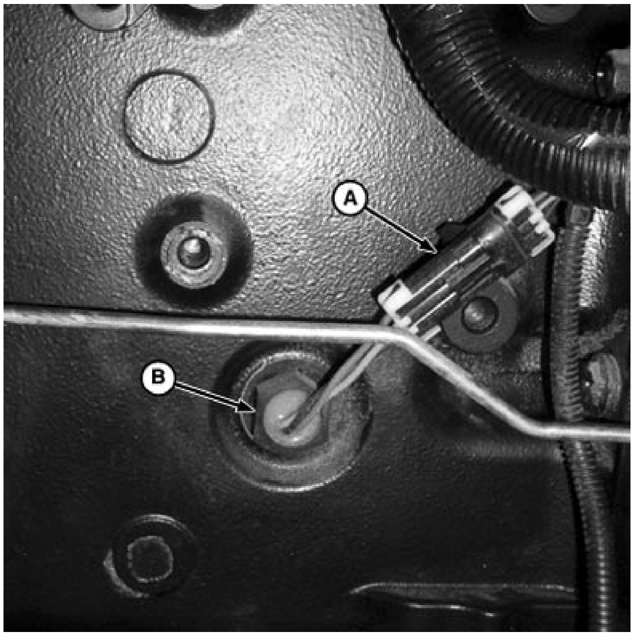
POWRREVERSER is a trademark of Deere & Company

JG31785,00001AA –19–15NOV04–1/1

Replace Wheel Speed Sensor

NOTE: The wheel speed sensor is located on the left side of the transmission, in front of the axle housing.

1. Disconnect battery negative (—) cable.
2. Drain transmission/hydraulic fluid.
3. Disconnect wire connector (A).
4. Replace wheel speed sensor (B) and O-ring.
5. Connect wire connector (A).
6. Connect battery negative (—) cable.
7. Fill transmission/hydraulic fluid. (See Transmission and Hydraulic Oil in Section 10, Group 20.)



LV10883 –UN–06OCT04

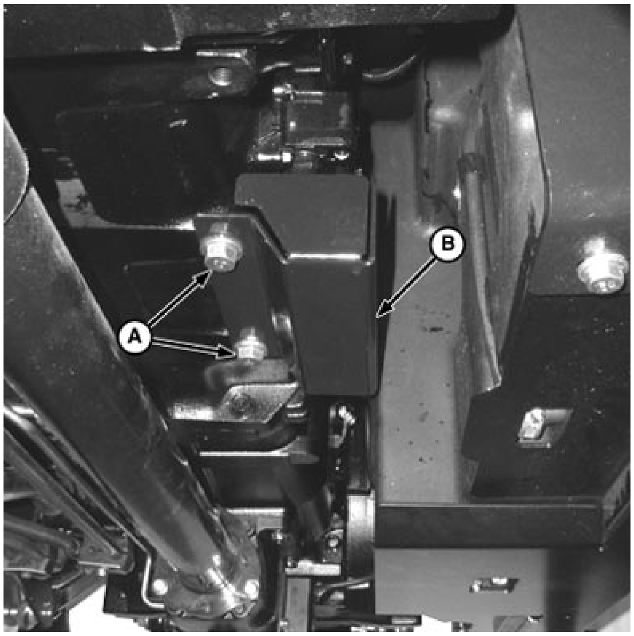
A—Wire Connector
B—Wheel Speed Sensor

JG31785,00001FA –19–18NOV04–1/1

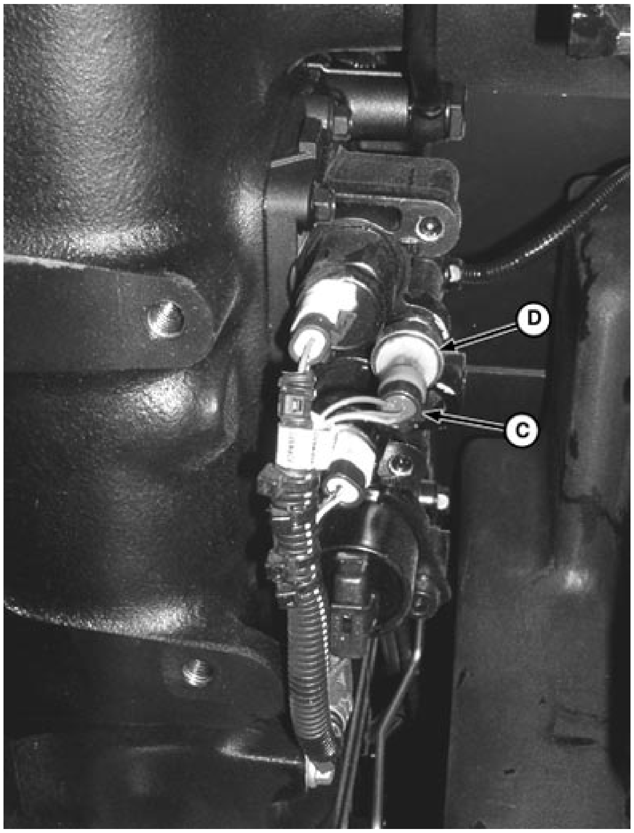
Replace Enable Pressure Sensor—POWRREVERSER™ Transmission

1. Disconnect battery negative (—) cable.
2. Remove two cap screws (A) and shield (B).
3. Disconnect wire connector (C).
4. Replace sensor (D) and O-ring.
5. Connect wire connector (C).
6. Install shield (B) with two cap screws (A).

A—Cap Screw (2 used)
B—Shield
C—Wire Connector
D—Sensor



LV10689 –UN–04OCT04

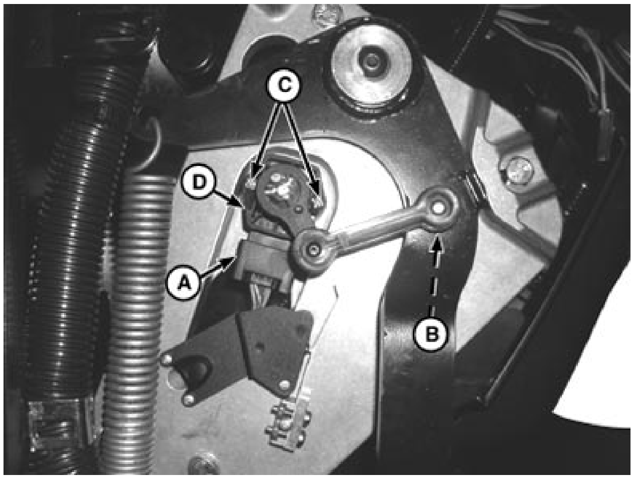


LV10711 –UN–04OCT04

POWRREVERSER is a trademark of Deere & Company

JG31785,00001AD –19–15NOV04–1/1

Replace Clutch Pedal Position Sensor—POWRREVERSER™ Transmission



1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Disconnect wire connector (A).
4. Remove ball stud (B) from the pedal.
5. Remove two screws (C) and clutch position sensor (D).

A—Wire Connector
B—Ball Stud
C—Screw (2 used)
D—Clutch Position Sensor

POWRREVERSER is a trademark of Deere & Company

Continued on next page

6. Remove screw (E), lever (G) and torsion spring (F).

7. Remove stop (H) from clutch position sensor (I).

NOTE: Position sensor linkage needs to be disassembled only if linkage is damaged.

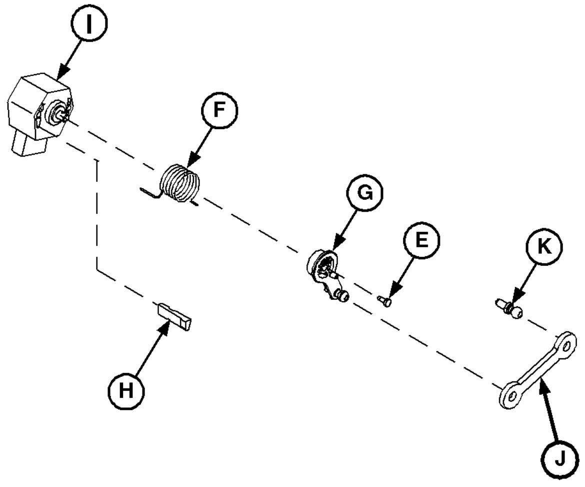
8. Remove link arm (J) and ball stud (K).

9. Install stop (H) in clutch position sensor (I).

10. Press ball stud (K) into link arm (J).

11. Press link arm (J) onto ball stud on lever (G).

12. Install torsion spring (F) and lever (G) on clutch position sensor (I) with screw (E).



LV10647 –UN–22SEP04

E—Screw
F—Torsion Spring
G—Lever
H—Stop
I—Clutch Position Sensor
J—Link Arm
K—Ball Stud

JG31785,00001AE –19–15NOV04–2/3

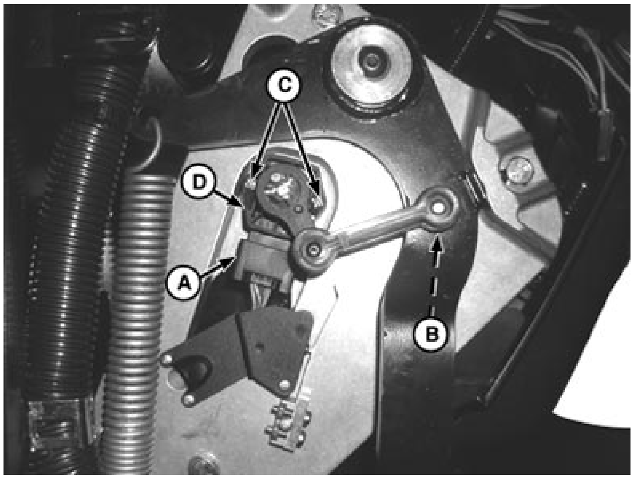
13. Install clutch position sensor assembly (D) with two screws (C).

14. Connect wire connector (A).

15. Install ball stud (B) on clutch pedal.

16. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

17. Connect battery negative (—) cable.



LV10646 –UN–22SEP04

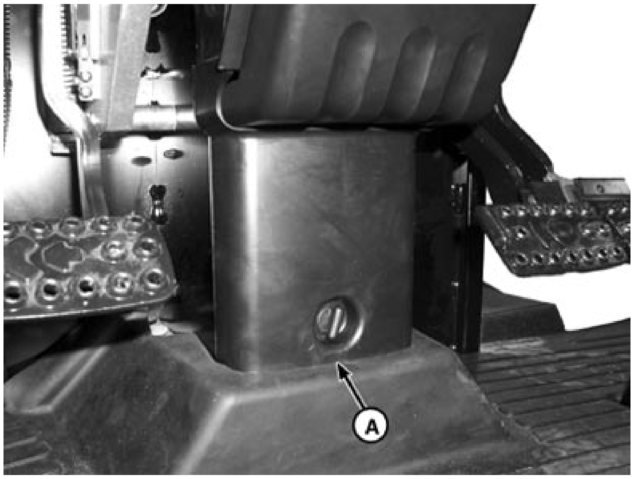
A—Wire Connector
B—Ball Stud
C—Screw (2 used)
D—Clutch Position Sensor

JG31785,00001AE –19–15NOV04–3/3

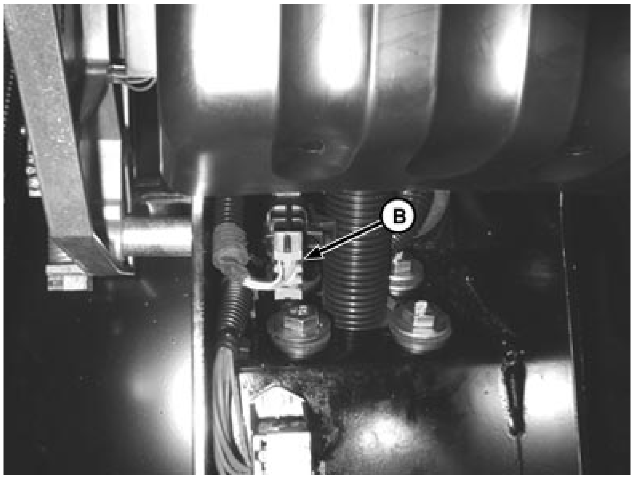
Replace Clutch Disengage Switch—POWRREVERSER™ Transmission

1. Disconnect battery negative (—) cable
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Remove lower access cover (A).
4. Disconnect wire connector (B).

A—Lower Access Cover
B—Wire Connector



LV10650 –UN–22SEP04



LV10651 –UN–22SEP04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

JG31785,00001AF –19–15NOV04–1/3

5. Disconnect wire connector (C) from clutch position sensor.

6. Remove three screws (D).

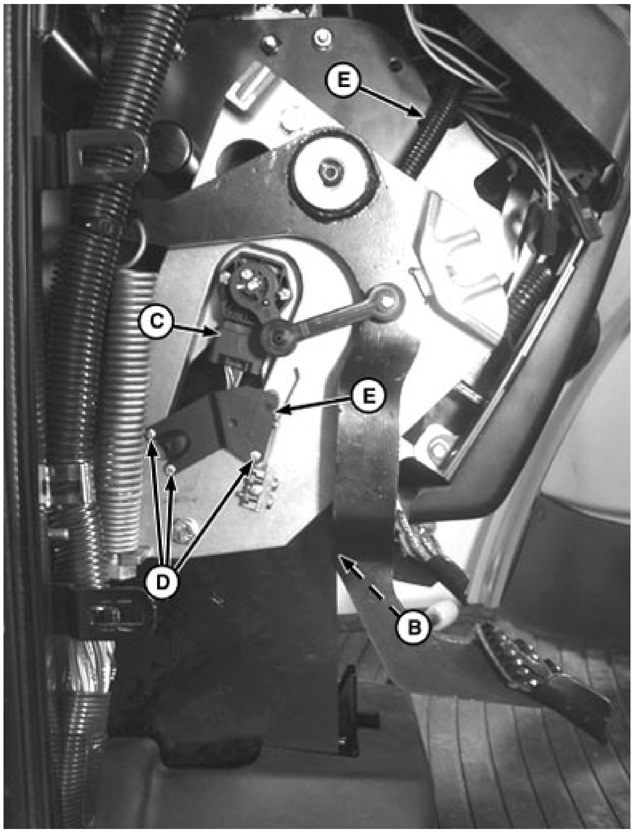
7. Remove clutch disengage switch and harness (E) from the console.

8. Route the new clutch disengage switch and harness (E) between the bracket and console and route the wire connector (B) to the bottom of the console.

9. Connect wire connector (C) to the clutch position sensor.

10. Install the clutch disengage switch and harness (E) with three screws (D).

B—Wire Connector
C—Wire Connector
D—Screw (3 used)
E—Clutch Disengage Switch and Harness



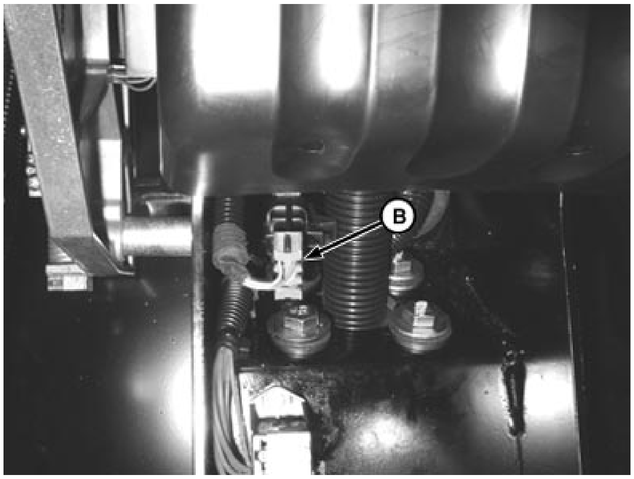
LV10652 –UN–02NOV04

Continued on next page

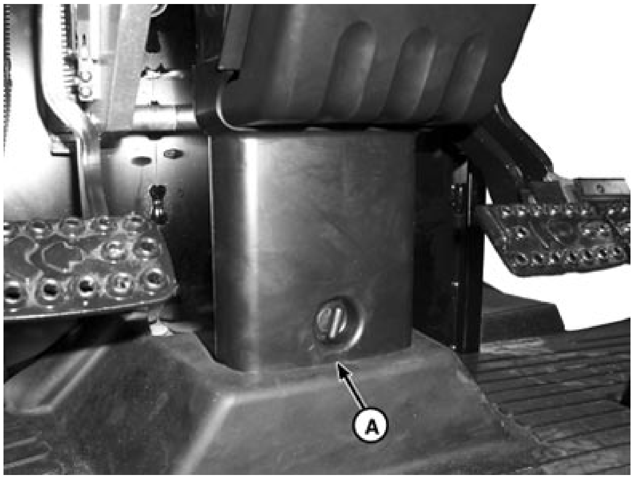
JG31785,00001AF –19–15NOV04–2/3

11. Connect wire connector (B).
12. Install lower access cover (A).
13. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
14. Connect battery negative (—) cable.

A—Lower Access Cover
B—Wire Connector



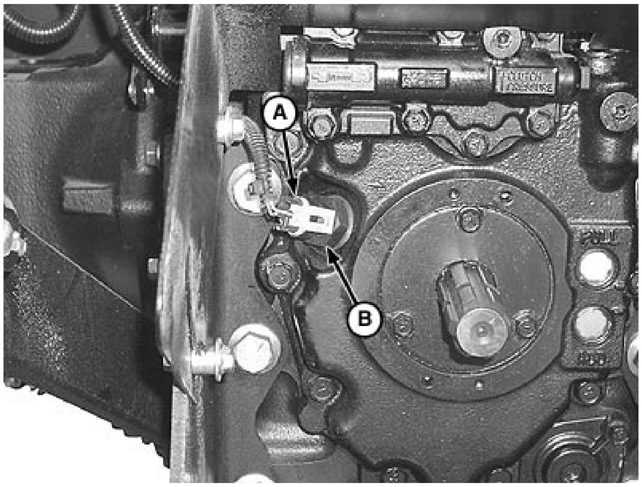
LV10651 –UN–22SEP04



LV10650 –UN–22SEP04

JG31785,00001AF –19–15NOV04–3/3

Replace Rear PTO Sensor—POWRREVERSER™ Transmission—With Electro-Hydraulic PTO



A—Wire Connector
B—Rear PTO Sensor

1. Disconnect battery negative (—) cable.

2. Disconnect wire connector (A) and remove rear PTO sensor (B).

IMPORTANT: Rear PTO sensor is plastic. Do not overtighten or sensor will be damaged.

3. Install new rear PTO sensor (B).

4. Connect wire connector (A).

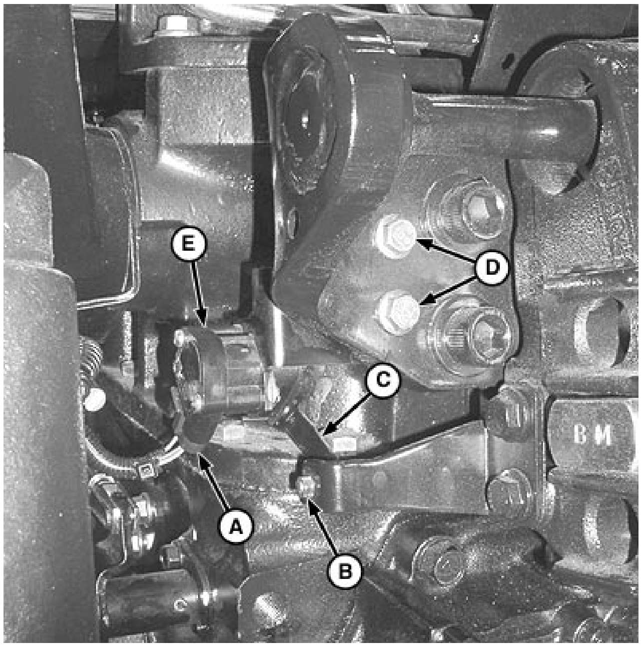
5. Connect negative (—) battery cable.

POWRREVERSER is a trademark of Deere & Company

JG31785,00001B0 –19–15NOV04–1/1

Replace Hitch Draft Sensor—Electro-Hydraulic Hitch

1. Disconnect battery negative (—) cable.
2. Disconnect wire connector (A).
3. Remove nut (B) and disconnect link arm (C).
4. Remove two flanged cap screws (D) and hitch draft sensor (E).
5. Install new hitch draft sensor (E) with two flanged cap screws (D).
6. Connect link arm (C) to bracket with nut (B).
7. Connect wire connector (A).
8. Connect battery negative (—) cable.



LV10633 –UN–20SEP04

A—Wire Connector
B—Nut
C—Link Arm
D—Flanged Cap Screw (2 used)
E—Hitch Draft Sensor

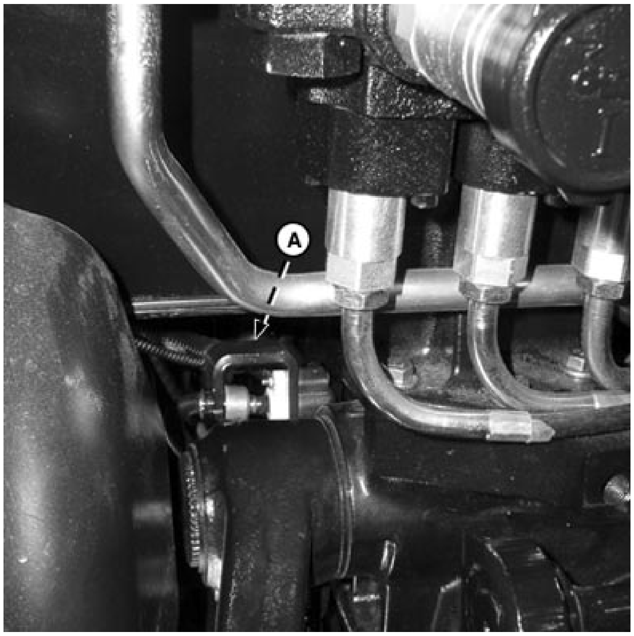
JG31785,00001B1 –19–15NOV04–1/1

Replace Hitch Position Sensor—Electro-Hydraulic Hitch

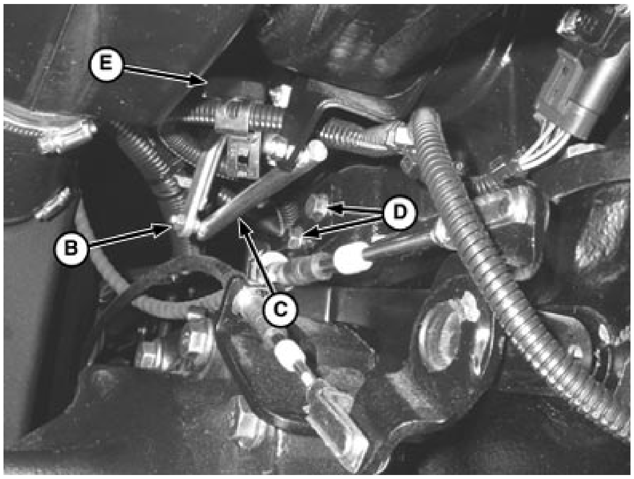
NOTE: The hitch position sensor is located behind the left draft arm.

1. Disconnect battery negative (—) cable.
2. Disconnect wire connector (A).
3. Remove nut (B) and disconnect the link arm (C).
4. Remove cap screws (D) and hitch position sensor assembly (E).

A—Wire Connector
B—Nut
C—Link Arm
D—Cap Screw (2 used)
E—Hitch Position Sensor Assembly



LV10746 –UN–27OCT04



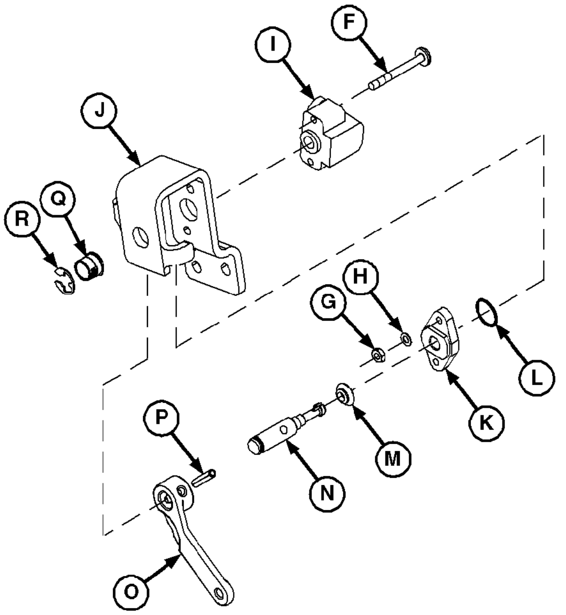
LV10747 –UN–27OCT04

Continued on next page

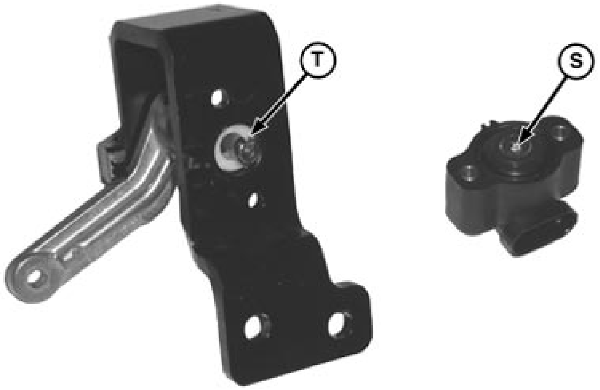
5. Remove two screws (F), washers (G) and nuts (H), and remove sensor (I) from bracket (J).

6. Inspect and replace parts (K—R) as needed.

7. Align the boss (S) in sensor (I) with groove (T) in shaft (N). Rotate sensor to align mount holes and install screws (F), washers (H) and nuts (G).



LV10858 –UN–06OCT04



LV10859 –UN–06OCT04

F—Screw (2 used)
G—Nut (2 used)
H—Washer (2 used)
I—Sensor
J—Bracket
K—Support
L—O-Ring
M—Seal
N—Shaft
O—Lever
P—Roll Pin
Q—Grommet
R—Snap Ring
S—Boss
T—Groove

Continued on next page

RB14256,0004E61 –19–20SEP04–2/3

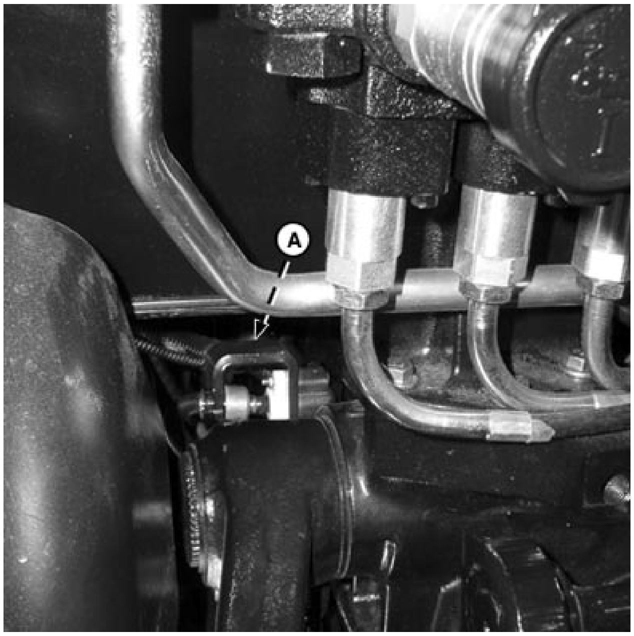
8. Install hitch position sensor assembly (E) with cap screws (D).

9. Connect link arm (C) to lever and install nut (B).

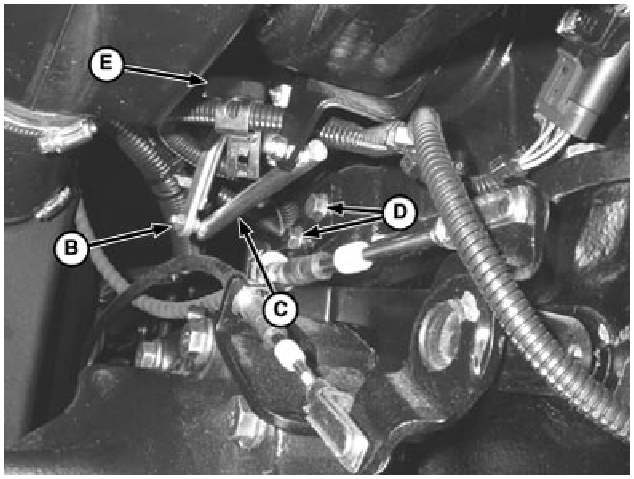
10. Connect wire connector (A).

11. Connect battery negative (—) cable.

A—Wire Connector
B—Nut
C—Link Arm
D—Cap Screw (2 used)
E—Hitch Position Sensor Assembly



LV10746 –UN–27OCT04



LV10747 –UN–27OCT04

RB14256,0004E61 –19–20SEP04–3/3

Replace Electro-Hydraulic Directional Reverser—POWRREVERSER™ Transmission

1. Disconnect battery negative (—) cable.

2. Remove instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors or Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)

3. Remove cover (A).

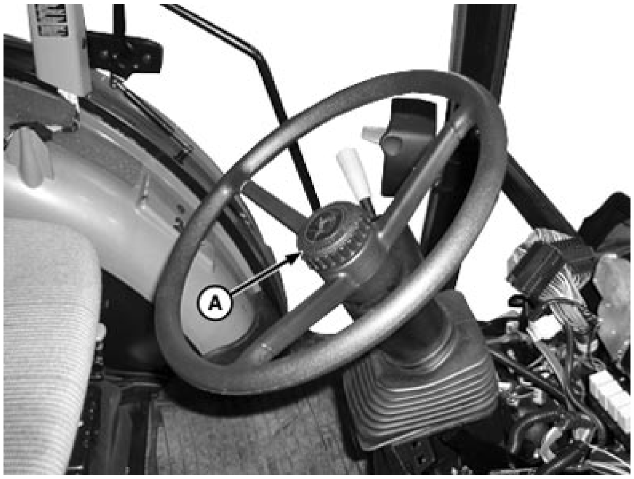
4. Remove lock nut (B), washer (C) and knob (D).

5. Remove washer (E).

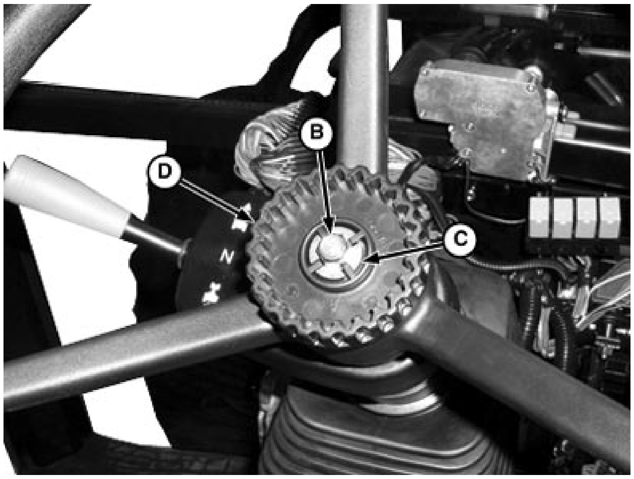
6. Straighten tab (F) on lock washer (G).

7. Remove nut (H), lock washer (G) and steering wheel (I).

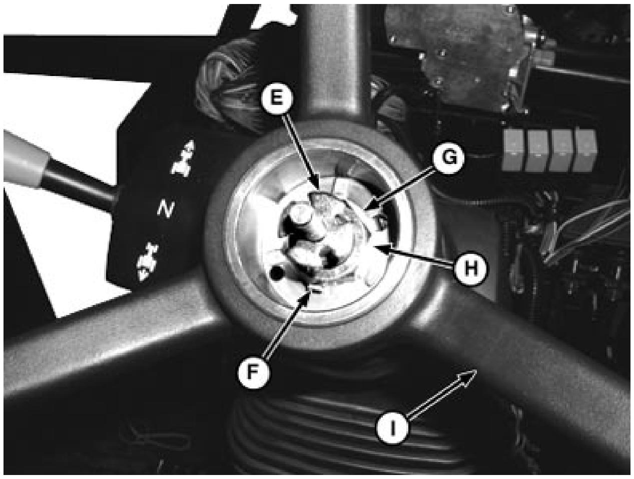
A—Cover
B—Lock Nut
C—Washer
D—Knob
E—Washer
F—Tab
G—Lock Washer
H—Nut
I—Steering Wheel



LV10893 –UN–06OCT04



LV10894 –UN–06OCT04



LV10895 –UN–06OCT04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

JG31785,00001B2 –19–15NOV04–1/5

8. Remove snap ring (J), spacer (K) and washer (L).

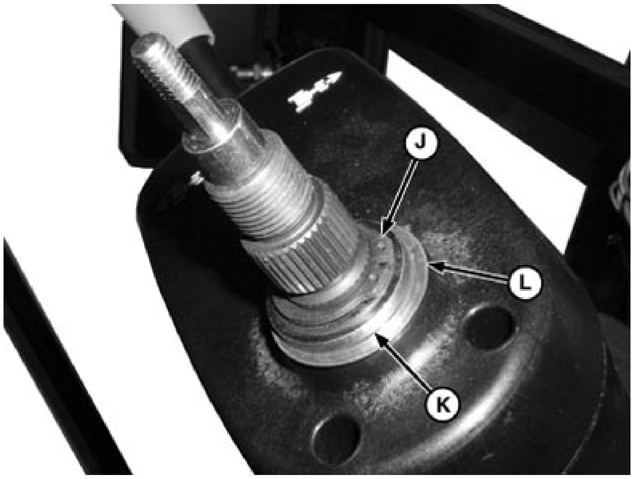
9. Remove nut (M) and cap screw (N).

10. Disconnect wire connector (O).

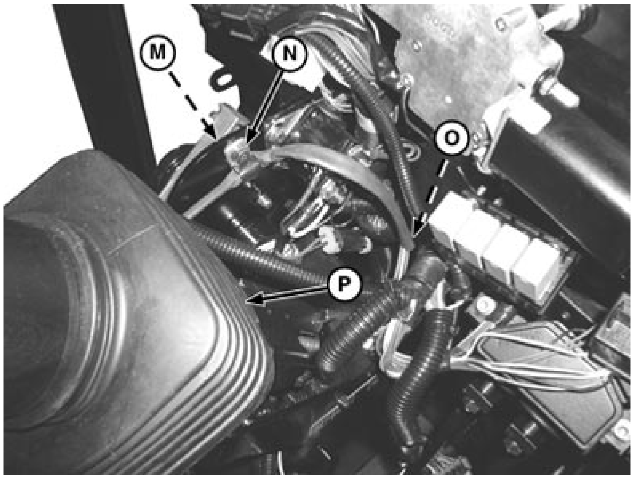
11. Remove directional reverser assembly and boot (P).

12. Route wiring harness (Q) through channel (R).

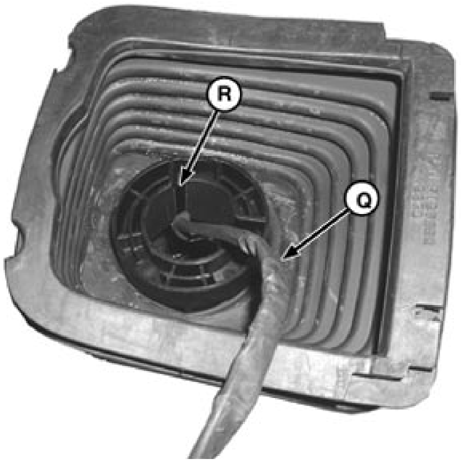
J—Snap Ring
K—Spacer
L—Washer
M—Nut
N—Cap Screw
O—Wire Connector
P—Directional Reverser Assembly and Boot
Q—Wiring Harness
R—Channel



LV10896 –UN–06OCT04



LV10911 –UN–08OCT04



LV10912 –UN–08OCT04

Continued on next page

JG31785,00001B2 –19–15NOV04–2/5

13. Remove four screws (S) from the lower half of the housing.

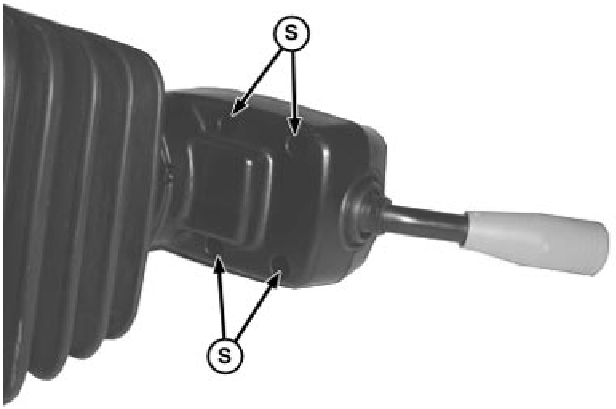
14. Remove two screws (T) and housing top cover (U).

15. Replace electro-hydraulic reverser.

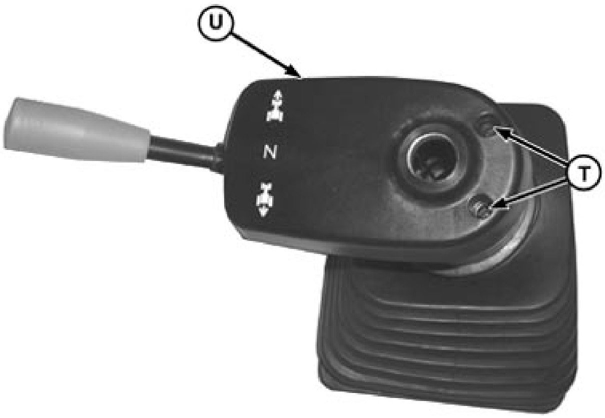
16. Install housing top cover (U) using two screws (T).

17. Install four screws (S) in the lower half of the housing.

S—Screw (4 used)
T—Screw (2 used)
U—Housing Top Cover



LV10914 –UN–08OCT04



LV10913 –UN–08OCT04

Continued on next page

JG31785,00001B2 –19–15NOV04–3/5

18. Route wiring harness (Q) through channel (R).

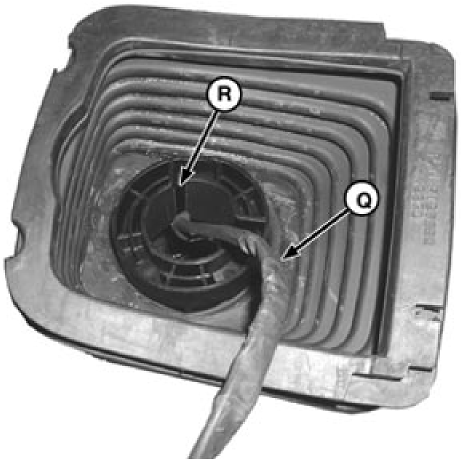
19. Install directional reverser assembly and boot (P).

20. Connect wire connector (O).

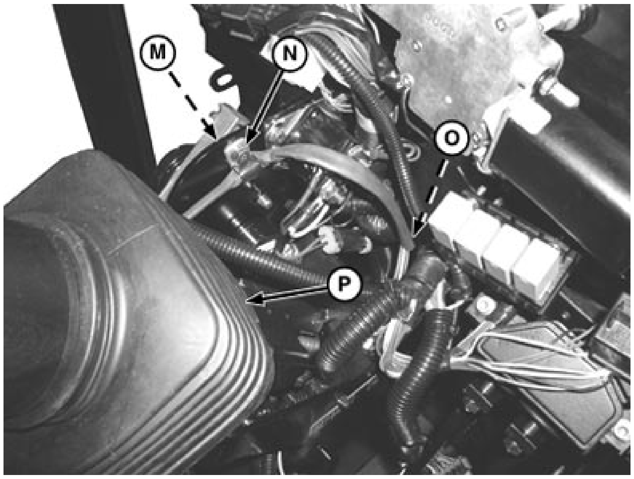
21. Install wiring harness to console using a cap screw (N) and nut (M).

22. Install washer (L), spacer (K) and snap ring (J).

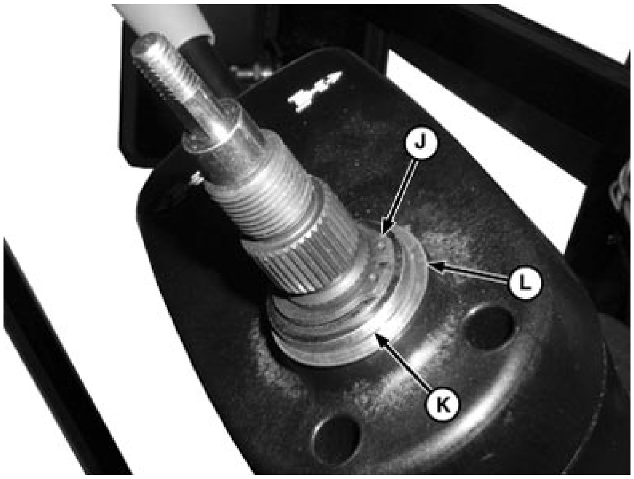
J—Snap Ring
K—Spacer
L—Washer
M—Nut
N—Cap Screw
O—Wire Connector
P—Directional Reverser Assembly and Boot
Q—Wiring Harness
R—Channel



LV10912 –UN–08OCT04



LV10911 –UN–08OCT04



LV10896 –UN–06OCT04

Continued on next page

JG31785,00001B2 –19–15NOV04–4/5

23. Install steering wheel (I), lock washer (G) and nut (H). Tighten nut, and bend tab (F) to prevent nut from turning.

24. Install washer (E).

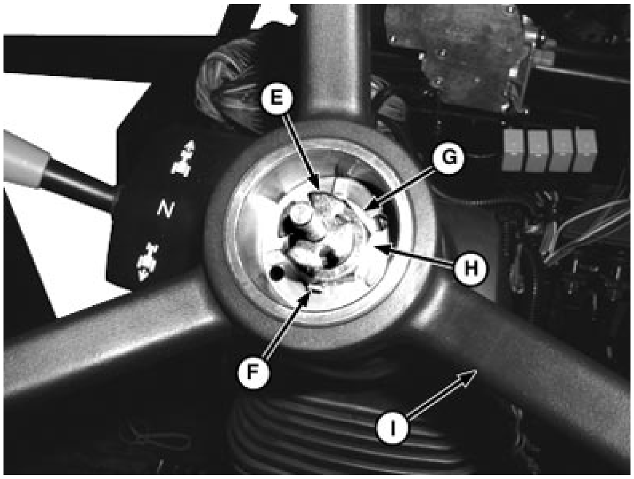
25. Install knob (D), washer (C) and lock nut (B).

26. Install cover (A).

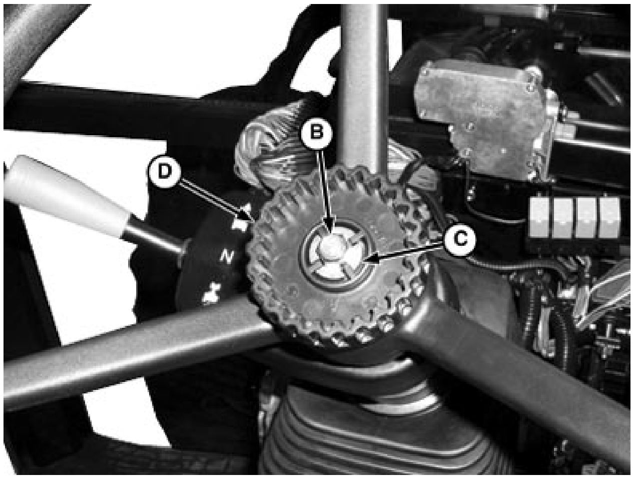
27. Install instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors or Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)

28. Connect battery negative (—) cable.

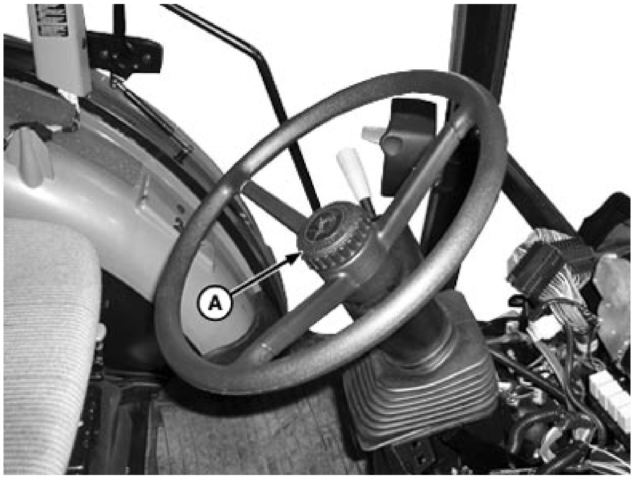
A—Cover
B—Lock Nut
C—Washer
D—Knob
E—Washer
F—Tab
G—Lock Washer
H—Nut
I—Steering Wheel



LV10895 –UN–06OCT04



LV10894 –UN–06OCT04



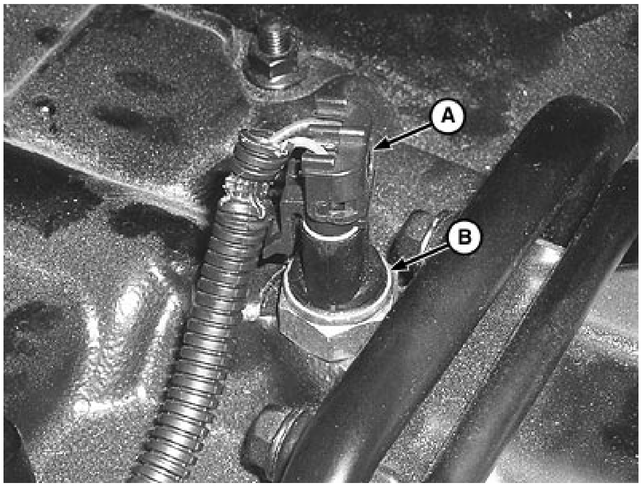
LV10893 –UN–06OCT04

JG31785,00001B2 –19–15NOV04–5/5

Replace Park Switch—POWRREVERSER™ Transmission

NOTE: The park switch is located just to the left of the gear and range shift tower.

1. Disconnect battery negative (—) cable.
2. Disconnect wire connector (A).
3. Replace park switch (B) and O-ring.
4. Connect wire connector (A).
5. Connect battery negative (—) cable.



LV10868 –UN–07OCT04

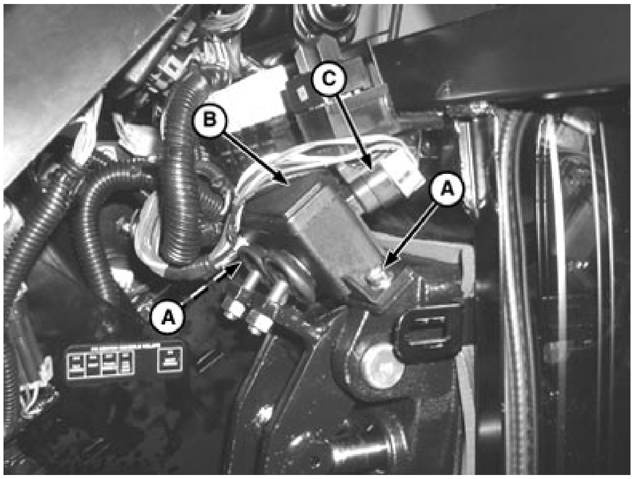
A—Wire Connector
B—Park Switch

POWRREVERSER is a trademark of Deere & Company

JG31785,00001B3 –19–15NOV04–1/1

Replace Brake Pedal Switch—Electro-Hydraulic Tractors

1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Remove socket head screws (A).
4. Remove brake pedal switch (B) from bracket, and disconnect wire connector (C).
5. Connect wire connector (C) to new brake pedal switch (B) and install switch with socket head screws (A).
6. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
7. Connect battery negative (—) cable.



LV10688 –UN–04OCT04

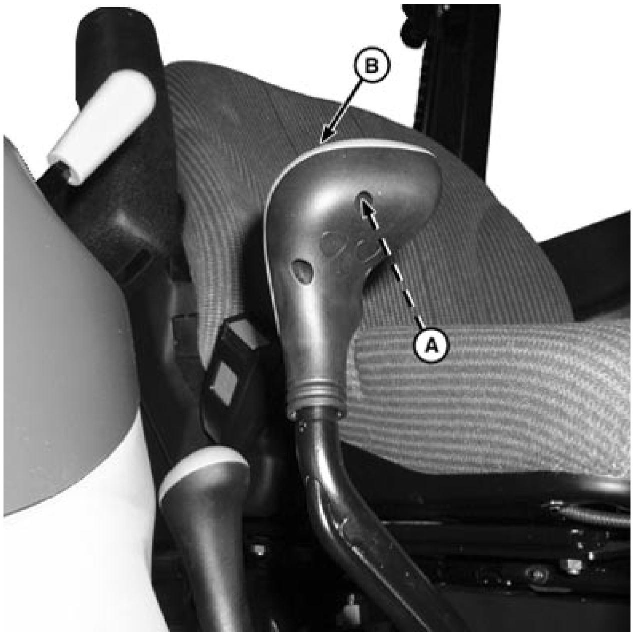
A—Socket Head Screw (2 used)
B—Brake Pedal Switch
C—Wire Connector

JG31785,00001B4 –19–15NOV04–1/1

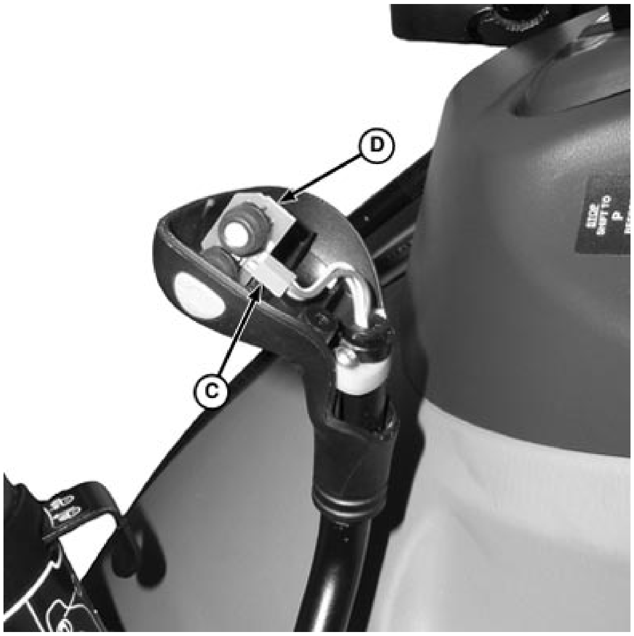
Replace Hi/Lo Shifter Switch—POWRREVERSER™ Transmission

1. Disconnect battery negative (—) cable.
2. Remove three screws (A) and cover (B).
3. Disconnect wire connector (C).
4. Remove Hi/Lo switch (D).
5. Install new Hi/Lo switch (D).
6. Connect wire connector (C).
7. Install cover (B) and screws (A).
8. Connect battery negative (—) cable.

A—Screws (3 used)
B—Cover
C—Wire Connector
D—Hi/Lo Switch



LV10557 –UN–15SEP04



LV10558 –UN–15SEP04

POWRREVERSER is a trademark of Deere & Company

JG31785,00001B5 –19–15NOV04–1/1

Replace Mid-Mount Solenoid Switch

1. Disconnect battery negative (—) cable.

2. Cab Tractors: Remove right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 15.)

3. Disconnect wire connector (A).

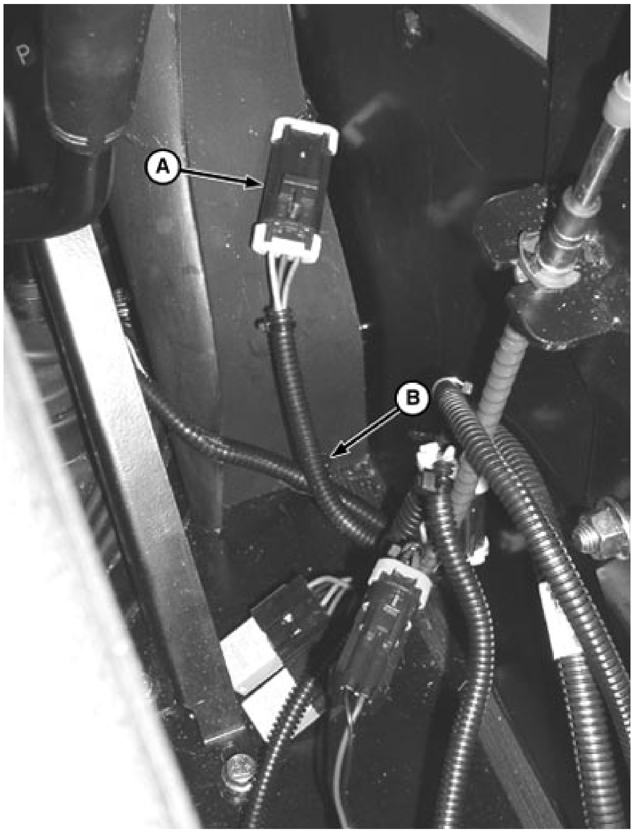
4. Remove screw (B) at the base of the joystick cover.

5. Pull floor mat away from the base of the joystick housing.

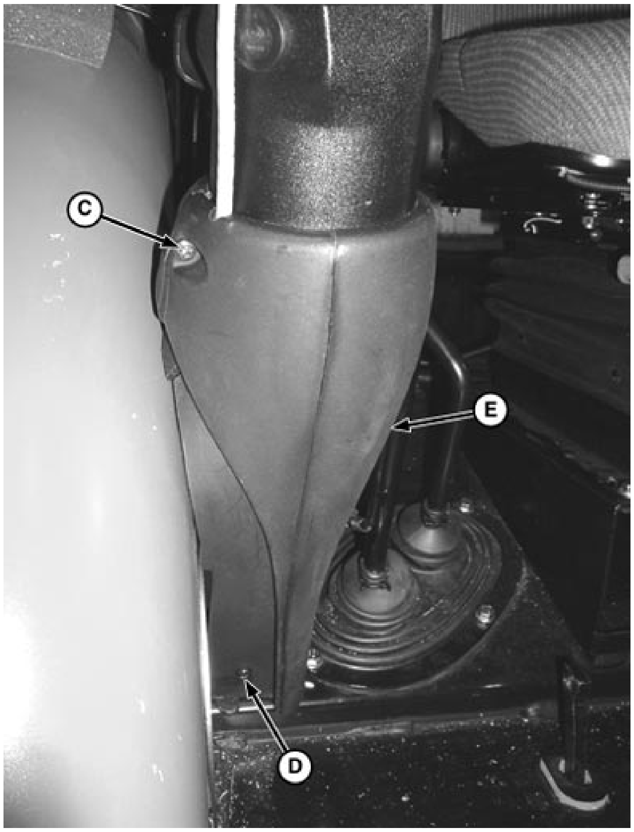
6. Remove screw and nut (C).

7. Remove screw (D) and cover (E).

A—Wire Connector
B—Screw
C—Screw and Nut
D—Screw
E—Cover



LV11091 –UN–14OCT04



LV11092 –UN–14OCT04

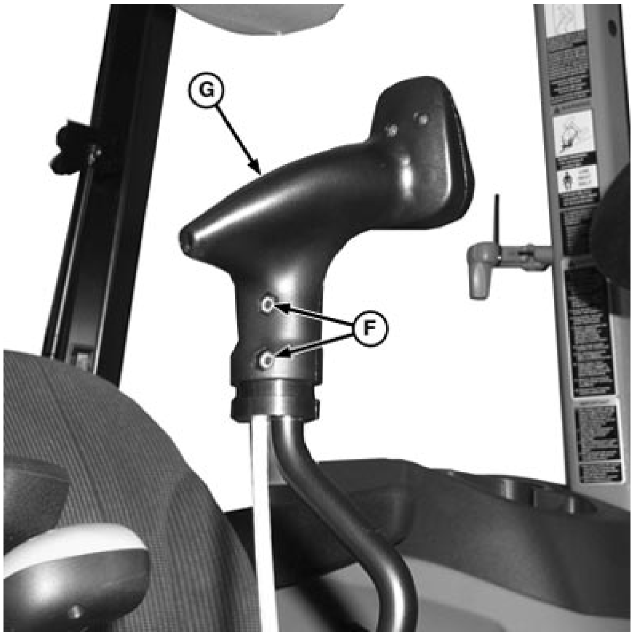
Continued on next page

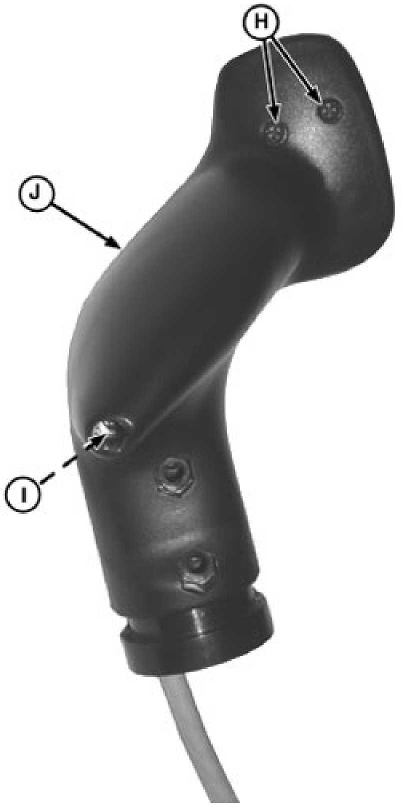
8. Remove two screws and nuts (F).

9. Remove switch housing assembly (G).

10. Remove screws (H and I) and cover (J).

F—Screw and Nut (2 used)
G—Switch Housing Assembly
H—Screw (2 used)
I—Screw
J—Cover

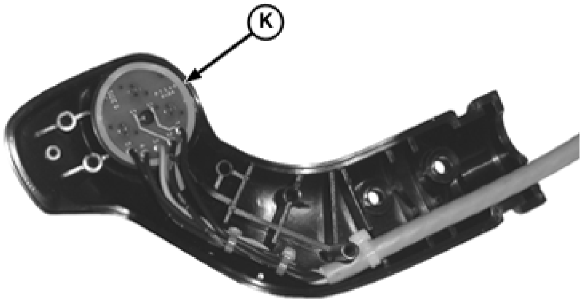

G
F
LV11093 –UN–14OCT04


H
J
I
LV11094 –UN–14OCT04

Continued on next page JG31785,00001B6 –19–15NOV04–2/5

11. Replace Mid-Mount solenoid switch (K).

K—Mid-Mount Solenoid Switch



LV11095 –UN–14OCT04

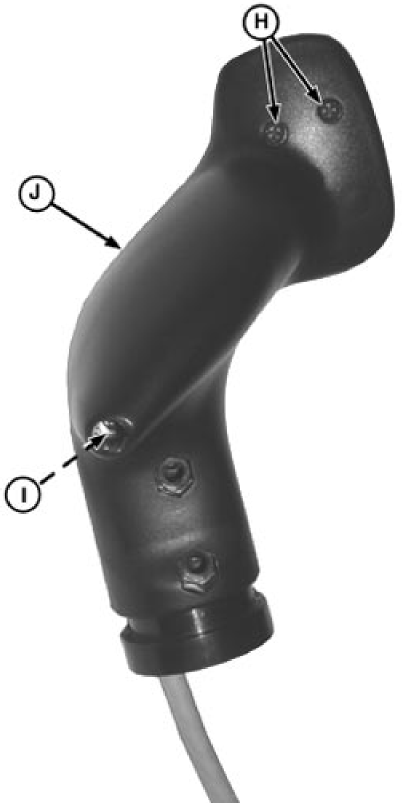
Continued on next page

JG31785,00001B6 –19–15NOV04–3/5

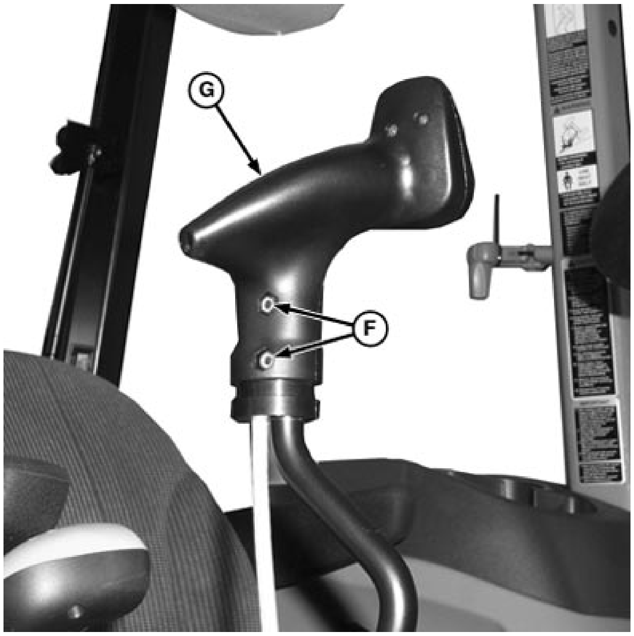
12. Install cover (J) with three screws (H and I).

13. Align holes in switch housing assembly (G) with holes in joystick shaft, and install switch housing using two screws and nuts (F).

F—Screw and Nut (2 used)
G—Switch Housing Assembly
H—Screw (2 used)
I—Screw
J—Cover



LV11094 –UN–14OCT04



LV11093 –UN–14OCT04

Continued on next page

JG31785,00001B6 –19–15NOV04–4/5

14. Install cover (E) over joystick and secure using screw and nut (C) and screw (D).

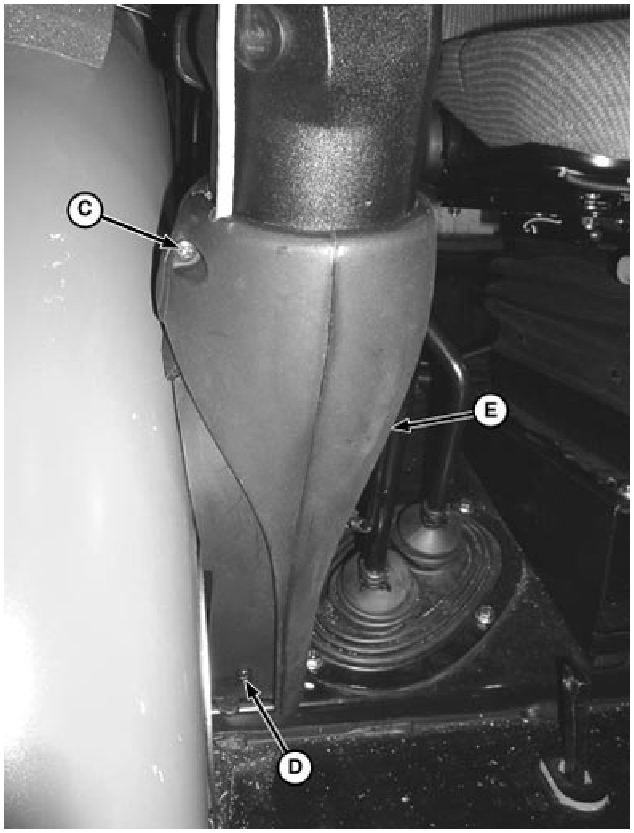
15. Install screw (B) at the base of the joystick cover.

16. Connect wire connector (A).

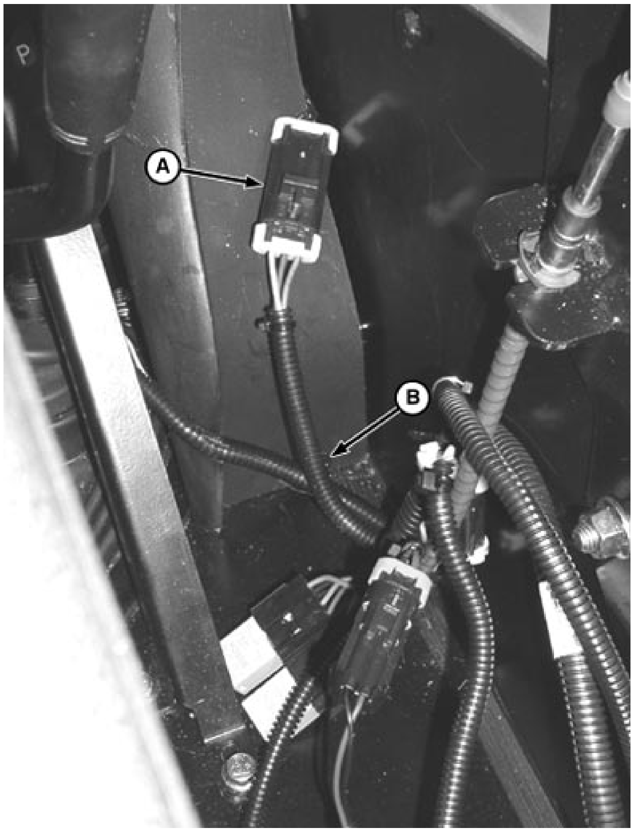
17. Cab Tractors: Install right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 15.)

18. Connect battery negative (—) cable.

A—Wire Connector
B—Screw
C—Screw and Nut
D—Screw
E—Cover



LV11092 –UN–14OCT04



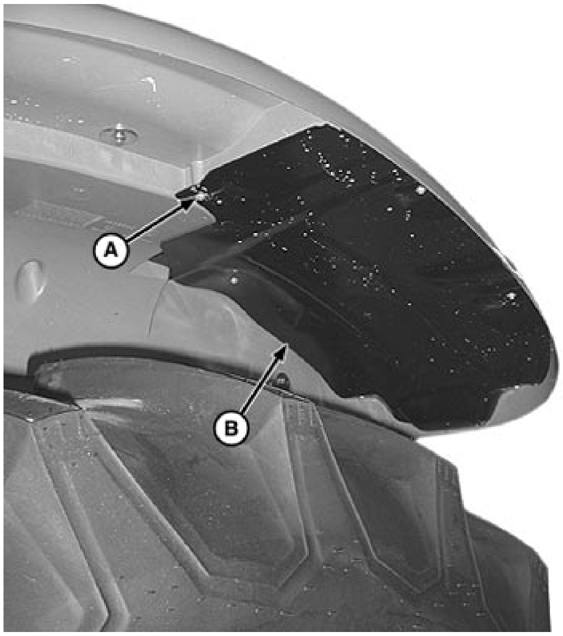
LV11091 –UN–14OCT04

JG31785,00001B6 –19–15NOV04–5/5

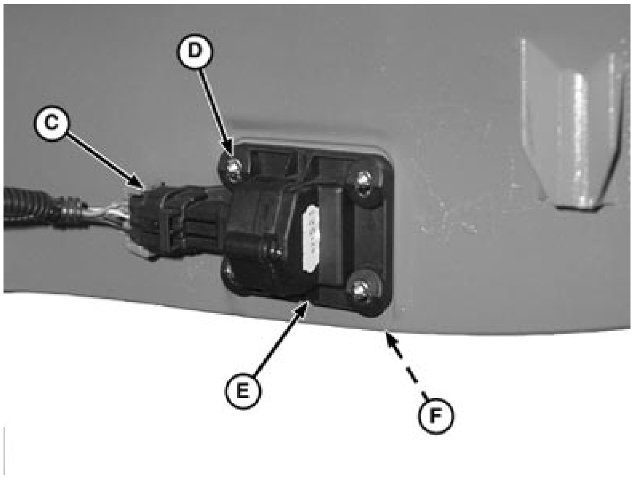
Replace External Raise/Lower Switch—Isolated Open Operator Station and Cab Tractors

NOTE: Standard left switch shown; optional right switch is similar.

1. Disconnect battery negative (—) cable.
2. Remove six screws (A) and inner fender panel (B).
3. Disconnect wire connector (C).
4. Remove socket head screws and washers (D), raise/lower switch (E) and switch cover (F).
5. Install a new raise/lower switch (E) and switch cover (F).
6. Install socket head screws and washers (D).
7. Connect wire connector (C).
8. Install fender panel (B) using six screws (A).
9. Connect battery negative (—) cable.



LV10529 –UN–01NOV04



LV10530 –UN–15SEP04

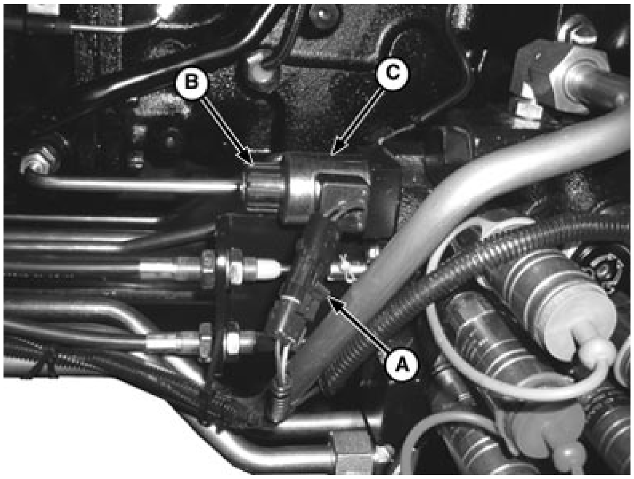
A—Screw (6 used)
B—Fender Panel
C—Wire Connector
D—Socket Head Screw and Washer (4 used)
E—Raise/Lower Switch
F—Switch Cover

JG31785,00001B7 –19–15NOV04–1/1

Replace Mid-Mount Solenoid

NOTE: Rear solenoid shown; front is similar.

1. Disconnect battery negative (—) cable.
2. Disconnect wire connector (A).
3. Remove retaining nut and O-ring (B) and solenoid coil (C).
4. Install solenoid coil (C) and retaining nut (B).
5. Connect wire connector (A).
6. Connect battery negative (—) cable.



LV10885 –UN–06OCT04

A—Wire Connector
B—Retaining Nut and O-ring
C—Solenoid Coil

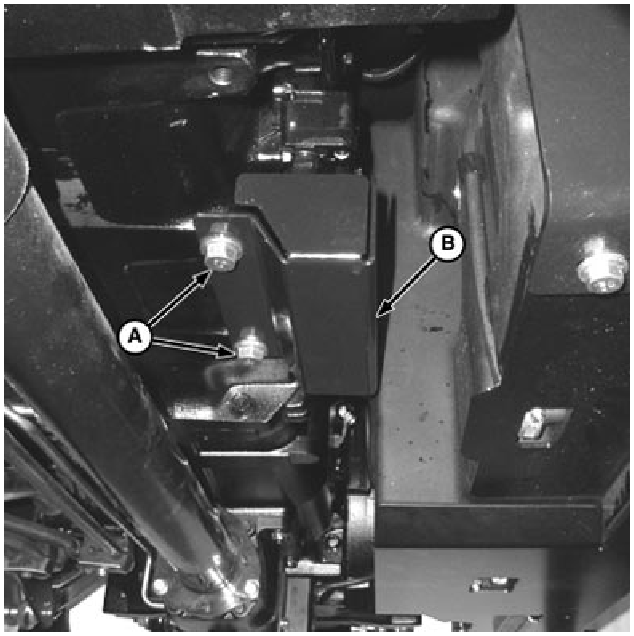
JG31785,00001B9 –19–15NOV04–1/1

Replace Clutch Enable Solenoid—POWRREVERSER™ Transmission

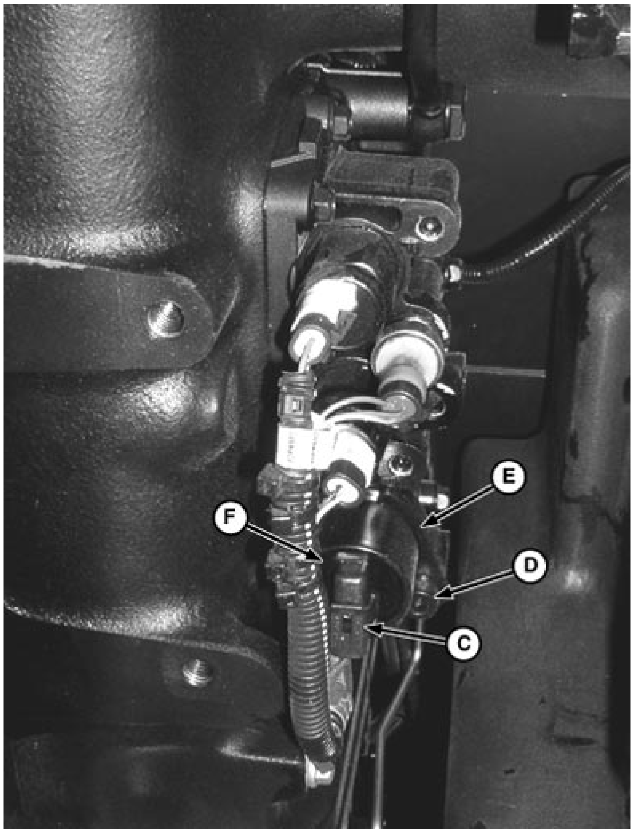
NOTE: The clutch enable solenoid is located on the left side of the transmission.

1. Disconnect battery negative (—) cable.
2. Remove two cap screws (A) and shield (B).
3. Disconnect wire connector (C).
4. Remove socket head screw (D), retainer (E), solenoid (F) and O-ring.
5. Install new solenoid (F) and O-ring using retainer (E) and socket head screw (D).
6. Connect wire connector (C).
7. Install shield (B) using two cap screws (A).
8. Connect battery negative (—) cable.

A—Cap Screw (2 used)
B—Shield
C—Wire Connector
D—Socket Head Screw
E—Retainer
F—Solenoid



LV10689 –UN–04OCT04



LV10702 –UN–04OCT04

POWRREVERSER is a trademark of Deere & Company

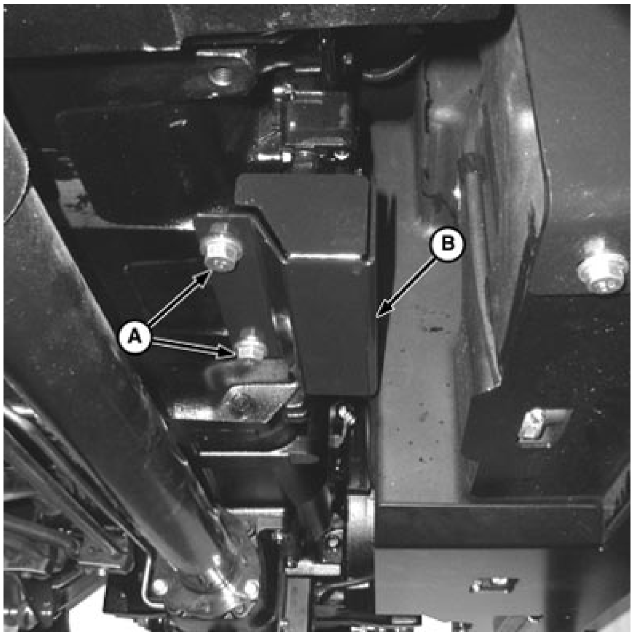
JG31785,00001BA –19–15NOV04–1/1

Replace Trans Forward Solenoid—POWRREVERSER™ Transmission

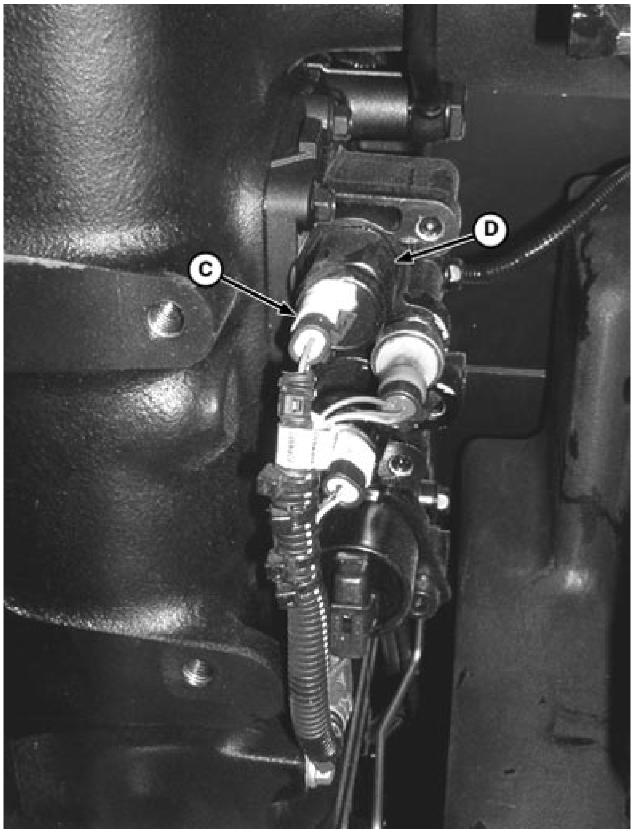
NOTE: The trans forward solenoid is located on the left side of the transmission.

1. Disconnect battery negative (—) cable.
2. Remove cap screws (A) and shield (B).
3. Disconnect wire connector (C).
4. Remove solenoid (D), valve spool and spring.
5. Install solenoid (D), valve spool and spring.
6. Connect wire connector (C).
7. Install shield (B) and cap screws (A).
8. Connect battery negative (—) cable.

A—Cap Screw (2 used)
B—Shield
C—Wire Connector
D—Solenoid



LV10689 –UN–04OCT04



LV10709 –UN–04OCT04

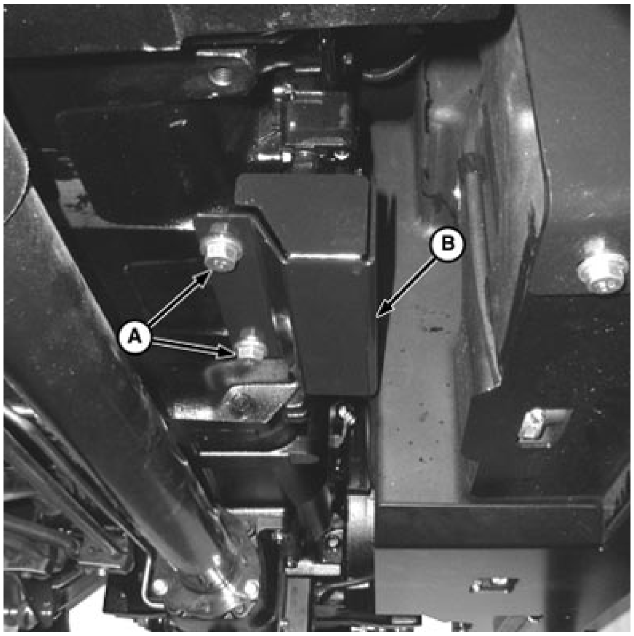
POWRREVERSER is a trademark of Deere & Company

JG31785,00001BB –19–15NOV04–1/1

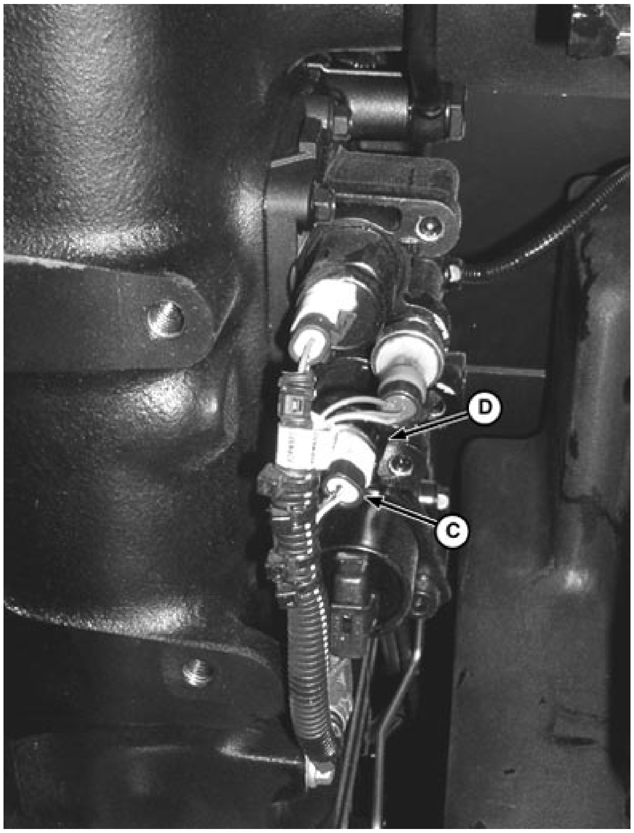
Replace Trans Reverse Solenoid—POWRREVERSER™ Transmission

1. Disconnect battery negative (—) cable.
2. Remove cap screws (A) and shield (B).
3. Disconnect wire connector (C).
4. Remove solenoid (D), valve spool and spring.
5. Install solenoid (D), valve spool and spring.
6. Connect wire connector (C).
7. Install shield (B) and cap screws (A).

A—Cap Screw (2 used)
B—Shield
C—Wire Connector
D—Solenoid



LV10689 –UN–04OCT04



LV10710 –UN–04OCT04

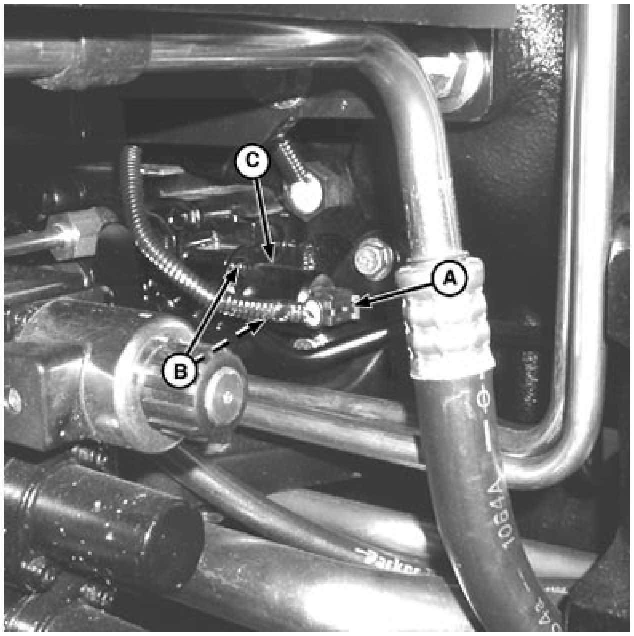
POWRREVERSER is a trademark of Deere & Company

JG31785,00001BE –19–15NOV04–1/1

Replace High Solenoid—POWRREVERSER™ Transmission—With Electro-Hydraulic Hi/Lo

NOTE: The high solenoid is located on the right side of the transmission.

1. Disconnect battery negative (—) cable.
2. Disconnect wire connector (A).
3. Remove two screws (B) and high solenoid (C).
4. Install new high solenoid (C) with screws (B).
5. Connect wire connector (A).
6. Connect battery negative (—) cable.



LV10672 –UN–04OCT04

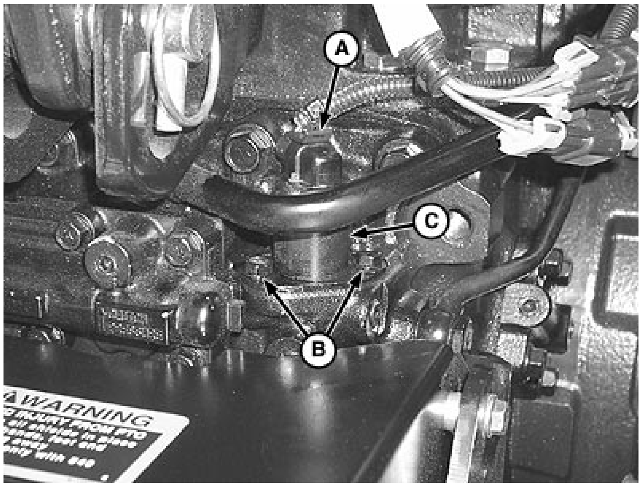
A—Wire Connector
B—Screw (2 used)
C—High Solenoid

POWRREVERSER is a trademark of Deere & Company

JG31785,00001BF –19–15NOV04–1/1

Replace Rear PTO Solenoid—Electro-Hydraulic PTO

1. Disconnect battery negative (—) cable.
2. Disconnect wire connector (A).
3. Remove cap screws (B) and rear PTO solenoid (C).
4. Install new rear PTO solenoid (C) and cap screws (B).
5. Connect wire connector (A).
6. Connect battery negative (—) cable.

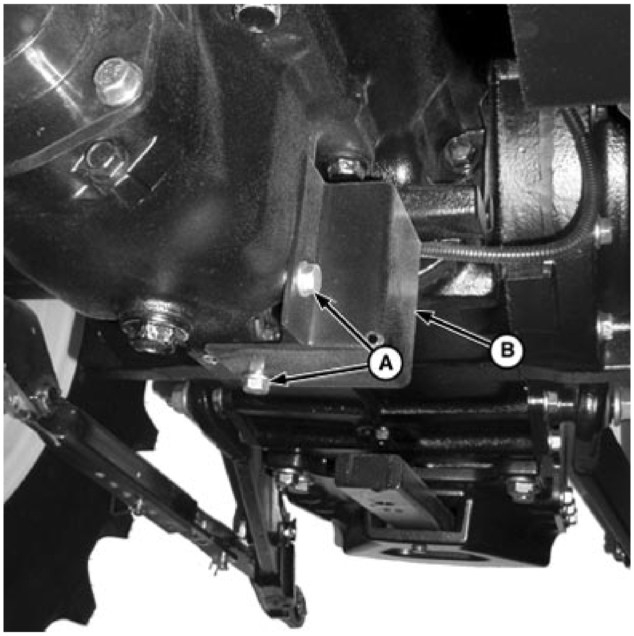


LV10630 –UN–20SEP04

A—Wire Connector
B—Cap Screw (2 used)
C—Rear PTO Solenoid

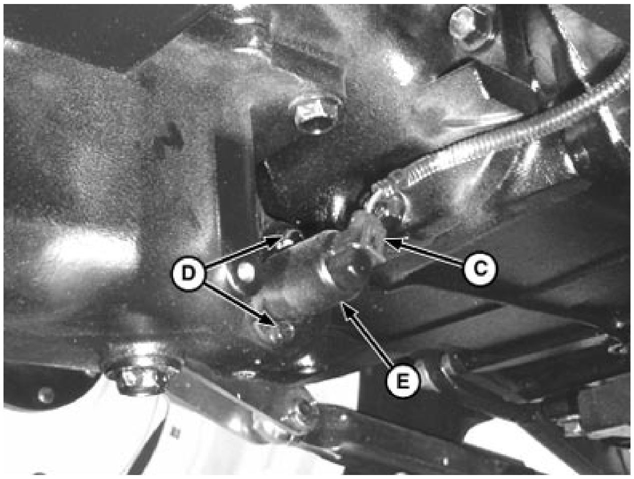
OUO1032,0004E56 –19–07SEP04–1/1

Replace MFWD Solenoid



LV10736 –UN–06OCT04

1. Disconnect battery negative (—) cable.
2. Drain hydraulic system/transmission.
3. Remove two cap screws (A) and shield (B).
4. Disconnect wire connector (C).
5. Remove two cap screws (D) and solenoid (E).
6. Install new solenoid (E) and two cap screws (D).
7. Connect wire connector (C).
8. Install shield (B) and two cap screws (A).
9. Fill hydraulic system/transmission to correct level with the specified oil.
10. Connect the battery negative (—) cable.

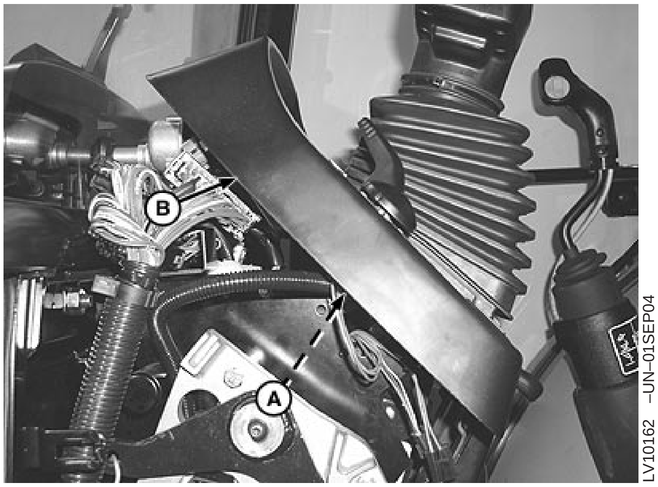


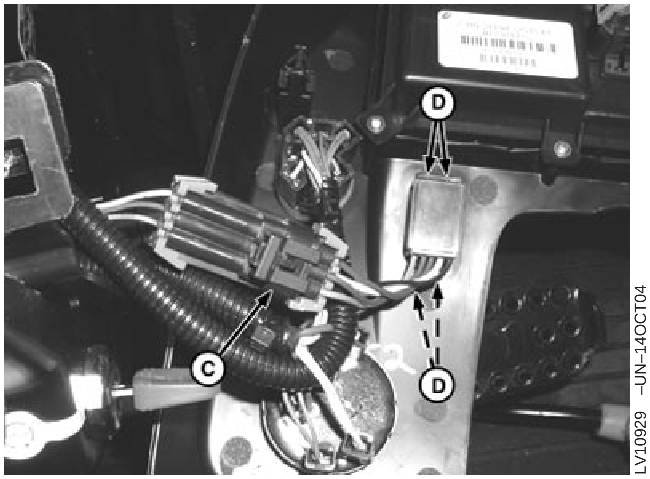
LV10737 –UN–06OCT04

A—Cap Screw (2 used)
B—Shield
C—Wire Connector
D—Cap Screw (2 used)
E—Solenoid

JG31785,00001C1 –19–15NOV04–1/1

Replace MFWD Switch





1. Disconnect battery negative (—) cable.
2. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Disconnect the turn signal wire connector (A), and turn the instrument panel (B) over.
4. Disconnect wire connector (C).
5. Remove the MFWD switch from the instrument panel, pressing in on the spring-loaded tabs (D) on both sides of the switch.
6. Install new MFWD switch into the instrument panel.
7. Connect wire connector (C).
8. Install the instrument panel (B) and connect the turn signal wire connector (A).
9. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
10. Connect battery negative (—) cable.

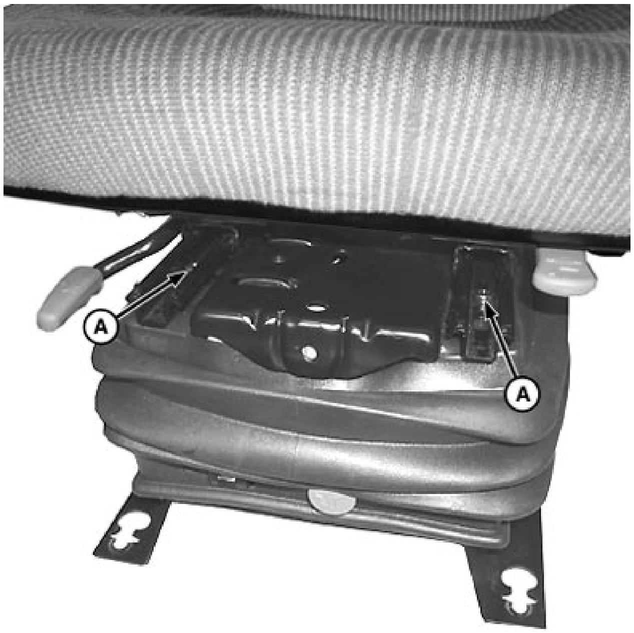
A—Turn Signal Wire Connector
B—Instrument Panel
C—Wire Connector
D—Spring-Loaded Tabs

JG31785,00001C2 –19–15NOV04–1/1

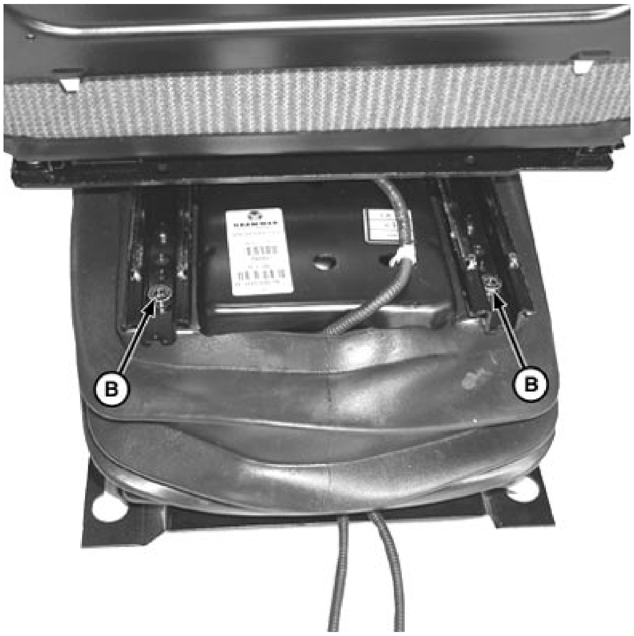
Replace Seat Height Control Switch (Optional Equipment)

1. Disconnect battery negative (—) cable.
2. Remove seat assembly. (See Remove and Install Seat and Support—Isolated Open Operator Station and Cab Tractors in Section 90, Group 05.)
3. Move the seat to the rear-most adjustment and remove screws (A).
4. Move the seat forward and remove screws (B).
5. Remove the seat from the seat base.

A—Screw (2 used)
B—Screw (2 used)



LV11275 –UN–20OCT04



LV11276 –UN–20OCT04

Continued on next page

JG31785,00001C3 –19–15NOV04–1/3

6. Remove cover (C) from the seat base.

7. Disconnect air line (D).

8. Disconnect wires (E and F).

9. Loosen set screw (G) and remove knob (H).

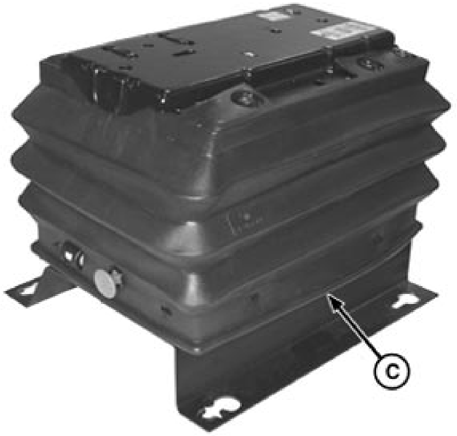
10. Remove nut (I), lock washer (J) and switch (K).

11. Install new switch (K) using lock washer (J) and nut (I).

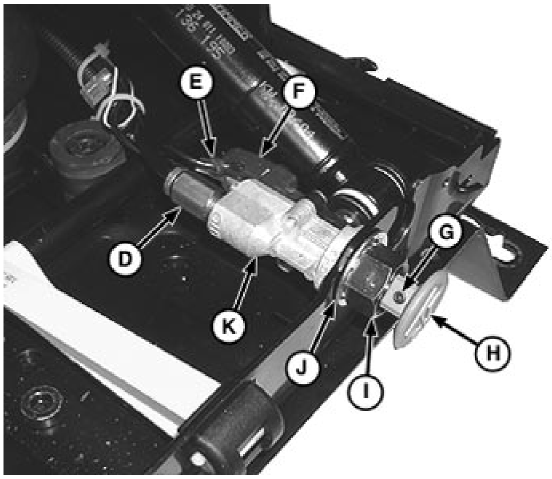
12. Install knob (H) and tighten set screw (G).

13. Connect air line (D) and wires (E and F).

14. Install cover (C) on seat base.



LV11277 –UN–20OCT04



LV11278 –UN–20OCT04

C—Cover
D—Air Line
E—Wire
F—Wire
G—Set Screw
H—Knob
I—Nut
J—Lock Washer
K—Switch

Continued on next page

JG31785,00001C3 –19–15NOV04–2/3

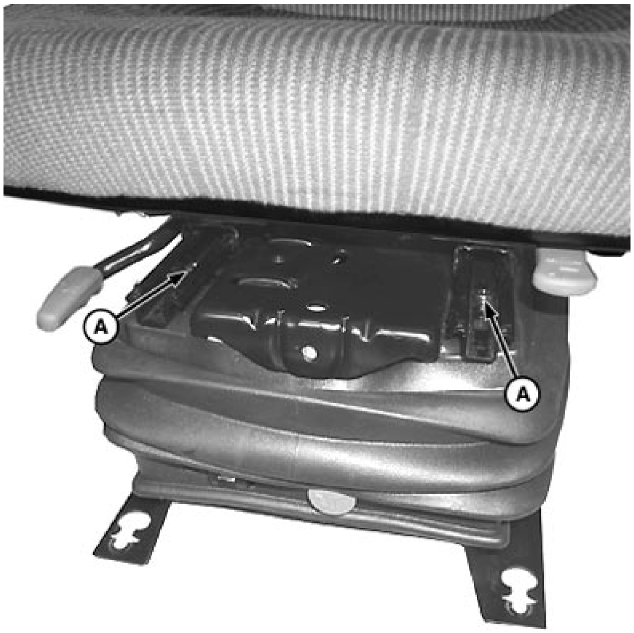
15. Install seat on seat base and install rear mounting screws (B).

16. Move seat to rear-most adjustment and install front mounting screws (A).

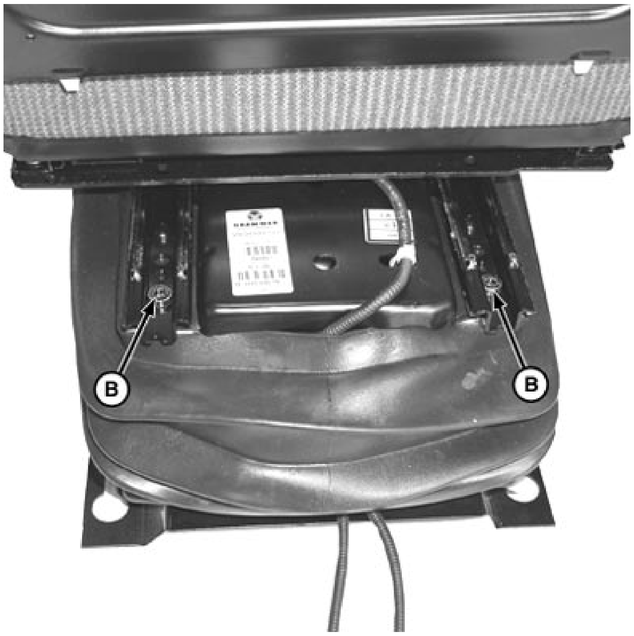
17. Install seat assembly. (See Remove and Install Seat and Support-Isolated Open Operator Station and Cab Tractors in Section 90, Group 05.)

18. Connect battery negative (—) cable.

A—Screw (2 used)
B—Screw (2 used)



LV11275 –UN–20OCT04



LV11276 –UN–20OCT04

JG31785,00001C3 –19–15NOV04–3/3

Wiring Harness

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1089,0000366 –19–05JUN01–1/3

Extraction Tool JDG364

Pulls wire from connector body.

OUO1089,0000366 –19–05JUN01–2/3

Terminal Applicator JDG783

Applies contact to terminal wire.

OUO1089,0000366 –19–05JUN01–3/3

Essential Tools

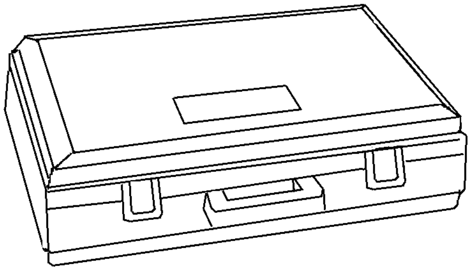
NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

JG31785,000040E –19–16FEB05–1/5

Technician’s Electrical Repair Kit JT07195B

Repair wire connectors



RW25558 –UN–29AUG96

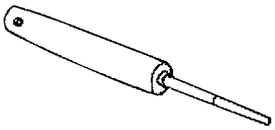
Continued on next page

JG31785,000040E –19–16FEB05–2/5

RW25541 –UN–20AUG96

WEATHER PACK™Extractor (Wide) JDG776

Remove terminals from METRI-PACK™ connectors



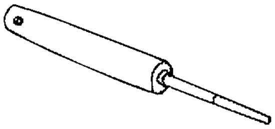
WEATHER PACK is a trademark of Packard Electric
METRI-PACK is a trademark of AMP Incorporated

JG31785,000040E –19–16FEB05–3/5

RW25541 –UN–20AUG96

WEATHER PACK™ Extractor (Narrow) JDG777

Remove terminals from METRI-PACK™ connectors



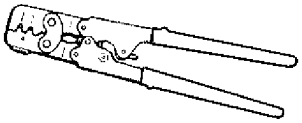
WEATHER PACK is a trademark of Packard Electric
METRI-PACK is a trademark of AMP Incorporated

JG31785,000040E –19–16FEB05–4/5

RW26025 –UN–18DEC98

Crimping Tool. JDG865

Crimp contacts to wires



JG31785,000040E –19–16FEB05–5/5

Service Parts Kits

RE11154 Electrical Connector and Wire Service Kit is available through your parts catalog.

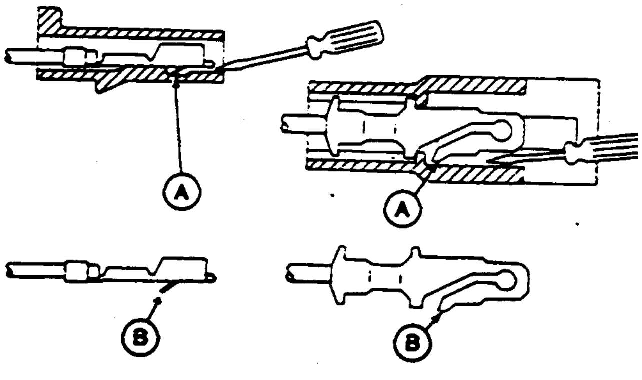
DX,ECONN,AE –19–04JUN90–1/1

Replace Connector Body—Blade Terminals

1. Use a small screwdriver to depress locking tang (A) on terminal. Slide connector body off.

2. Be sure to bend locking tang back to its original position (B) before installing connector body.

A—Locking Tang
B—Locking Tang—Original Position

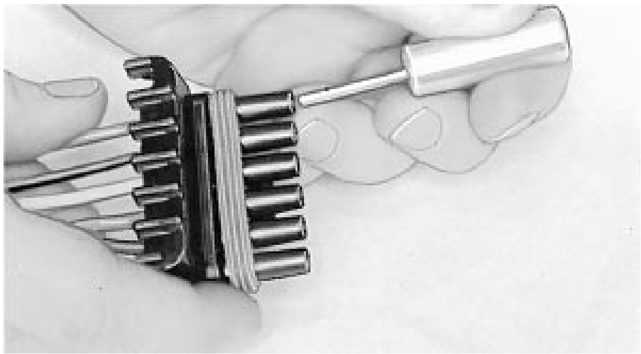


RW4218 –UN–23AUG88

AG,OUO1085,98 –19–09AUG00–1/1

Replace WEATHER PACK™ Connector

IMPORTANT: Identify wire color locations with connector terminal letters.



TS0128 –UN–23AUG88

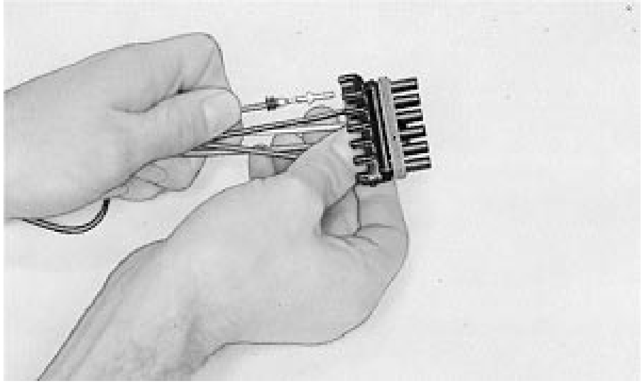
1. Open connector body.
2. Insert JDG364 Extraction Tool over terminal contact in connector body.
3. Hold extractor tool fully seated and pull wire from connector body.

NOTE: If terminal cannot be removed, insert wire or nail through extractor tool handle and push terminal contact from connector.

WEATHER PACK is a trademark of Packard Electric.

DX,ECONN,R –19–04JUN90–1/2

IMPORTANT: Carefully spread contact lances to make sure good seating on connector body.



TS0130 –UN–23AUG88

NOTE: Connector bodies are "keyed" for proper contact mating. Be sure contacts are in proper alignment.

4. Push contact into new connector body until fully seated.
5. Pull on wire slightly to be certain contact is locked in place.
6. Transfer remaining wires to correct terminal in new connector.
7. Close connector body.

DX,ECONN,R –19–04JUN90–2/2

Install WEATHER PACK™ Contact

NOTE: Cable seals are color coded for three sizes of wire:

- *Green - 18 to 20 gauge wire*
- *Gray - 14 to 16 gauge wire*
- *Blue - 10 to 12 gauge wire*

1. Slip correct size cable seal on wire.

2. Strip insulation from wire to expose 6 mm (1/4 in.) and align cable seal with edge of insulation.

TS0136 –UN–23AUG88

WEATHER PACK is a trademark of Packard Electric.

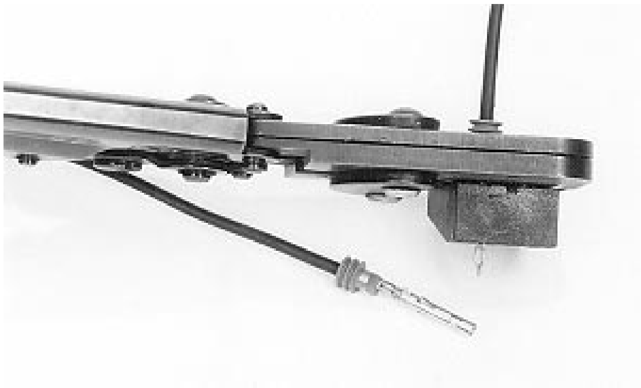
DX,ECONN,AD –19–04JUN90–1/3

NOTE: Contacts have numbered identification for two sizes of wire:

- *#15 for 14 to 16 gauge wire*
- *#19 for 18 to 20 gauge wire*

3. Put proper size contact on wire and crimp in place with a “W” type crimp, using JDG783 Terminal Applicator.

4. Secure cable seal to contact as shown, using JDG783 Terminal Applicator.

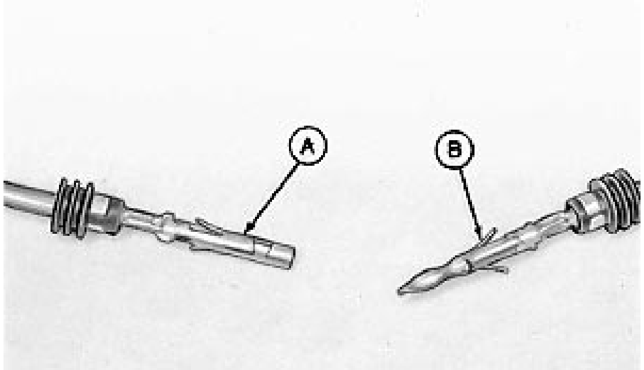


TS1623 –UN–02NOV94

DX,ECONN,AD –19–04JUN90–2/3

IMPORTANT: Proper contact installation for “sleeve” (A) and “pin” (B) is shown.

A—Sleeve
B—Pin



TS0139 –UN–02DEC88

DX,ECONN,AD –19–04JUN90–3/3

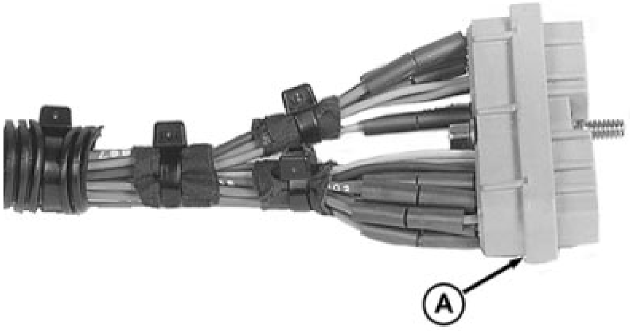
Repair *(Pull Type)* METRI-PACK™ Connectors

1. Disconnect METRI-PACK connector (A). Remove tie bands and tape.

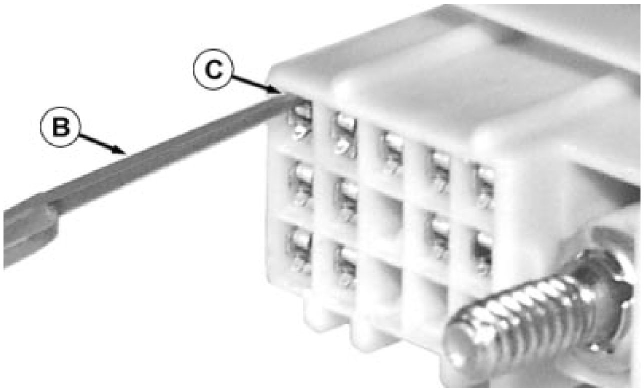
NOTE: Use JDG777 Terminal Extraction Tool[1] to remove terminals.

2. Angle tip so tip slides close to plastic socket edge pushing inward on terminal locking tab (D).
3. Insert JDG777 Terminal Extraction Tool (B) 6 mm (1/4 in.) into connector body socket (C).
4. Remove JDG777 Terminal Extraction Tool and push terminal (E) from socket.
5. Remove terminal and strip wire using JDG145 Electrician's Pliers[2].

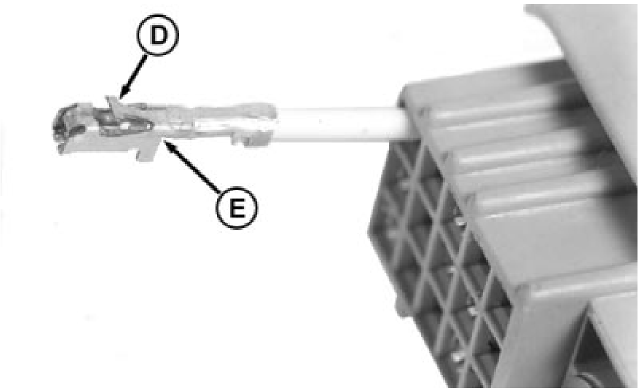
A—Connector
B—JDG777 Terminal Extraction Tool
C—Body Socket
D—Locking Tab
E—Terminal



RW16933A –UN–05AUG98



RW77096 –UN–30JUL98



RW16935A –UN–05AUG98

METRI-PACK is a trademark of Delphi Packard Electric Systems

---

[1] *Included JT07195B Electrical Repair Kit*

[2] *Included in JDG155 Electrical Repair Tool Kit*

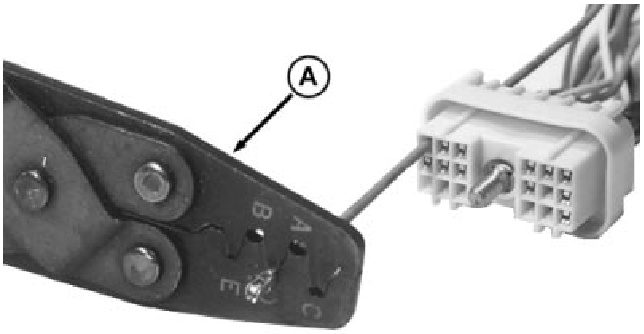
Continued on next page

JG31785,000022C –19–01DEC04–1/2

6. Crimp new terminal on wire through connector using JDG144 Crimping Pliers[1] (A).

NOTE: Terminal will seat only one way. If terminal does not pull into connector body socket, check for correct terminal alignment.

7. Check to make sure locking tab on new terminal is in outward position, then pull on wire until terminal locks in connector body socket.



RW77143 –UN–07DEC98

A—Crimping Pliers

40
15
6

---

[1] *Included in JDG155 Electrical Repair Tool Kit*

JG31785,000022C –19–01DEC04–2/2

Repair *(Push Type)* METRI-PACK™ Connectors

1. Disconnect METRI-PACK connector. Remove tie bands and tape.

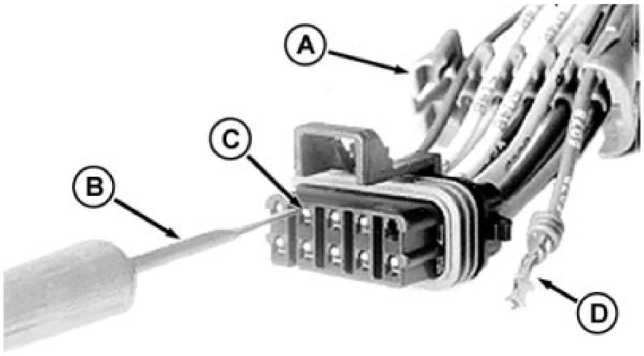
2. Remove connector lock (A), and mark wire colors for identification.

3. Identify wire color locations with connector terminal letters.

NOTE: Use JDG776 Extraction Tool with 56, 280, and 630 Series METRI-PACK terminals. Use JDG777 Extraction Tool with 150 Series METRI-PACK terminals.

4. Insert JDG776 or JDG777 Terminal Extraction Tool[1] (B) into connector body socket (C) pushing terminal locking tab inward.

5. Remove extraction tool and pull terminal (D) out of socket.



RW77137 –UN–08DEC98

A—Connector Lock
B—Extraction Tool
C—Connector Body Socket
D—Terminal

METRI-PACK is a trademark of Packard Electric Inc.

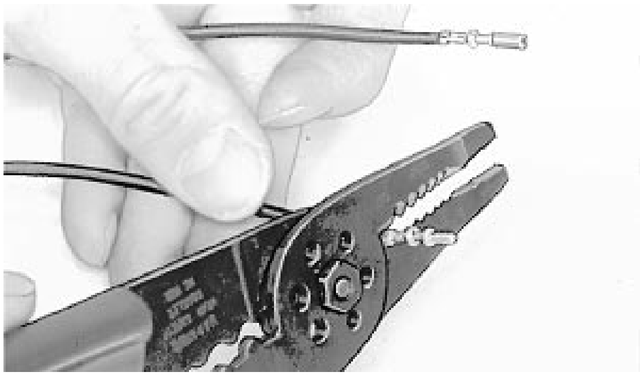
---

[1] *Included in JT07195B Electrical Repair Kit*

Continued on next page

JG31785,000022D –19–01DEC04–1/6

6. Remove old contact from wire using JDG145 Universal Electrical Pliers[1].


TS0132 –UN–23AUG88

---

[1] *Included in JDG155 Electrical Repair Tool Kit*

JG31785,000022D –19–01DEC04–2/6

NOTE: Cable seals are color coded for three sizes of wire:

- *Green - 18—20 Gauge Wire*
- *Gray - 14—16 Gauge Wire*
- *Blue - 10—12 Gauge Wire*

IMPORTANT: Seal must fit snug over cable insulation, without a gap between cable seal and insulation.

7. Push correct size cable seal on wire.

8. Strip insulation from wire to expose 6 mm (1/4 in.) and align cable seal with edge of insulation.

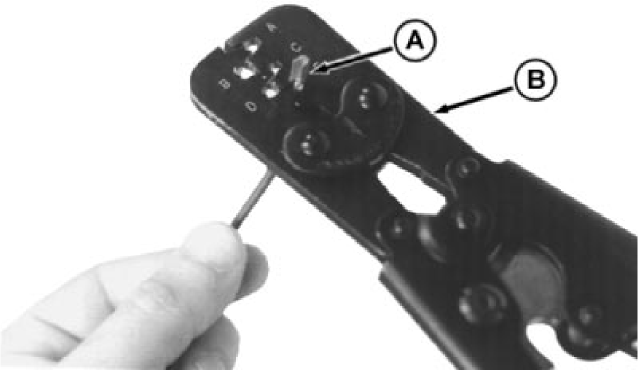
TS0136 –UN–23AUG88

JG31785,000022D –19–01DEC04–3/6

9. Install correct size contact on wire.

10. Crimp contact (A) in position with a “W” type crimp using JDG865 Crimping Tool (B).

A—Contact
B—Crimping Tool



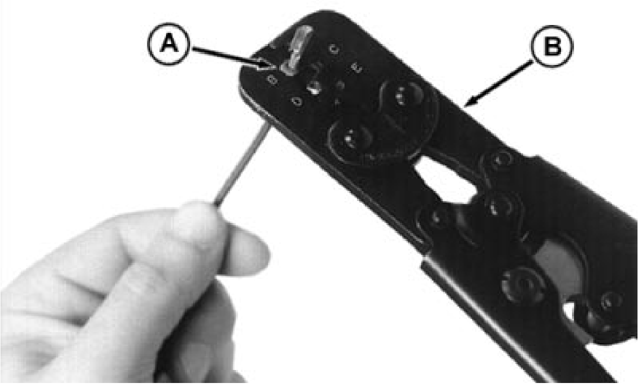
RW77139 –UN–07DEC98

Continued on next page

JG31785,000022D –19–01DEC04–4/6

11. Crimp cable seal (A) on contact using JDG865 Crimping Tool (B).

A—Cable Seal
B—Crimping Tool



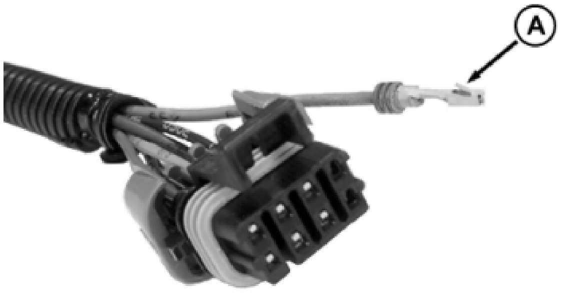
RW77138 –UN–07DEC98

JG31785,000022D –19–01DEC04–5/6

12. Make sure locking tab (A) on new terminal is in outward position.

13. Push terminal into connector body socket until terminal locks.

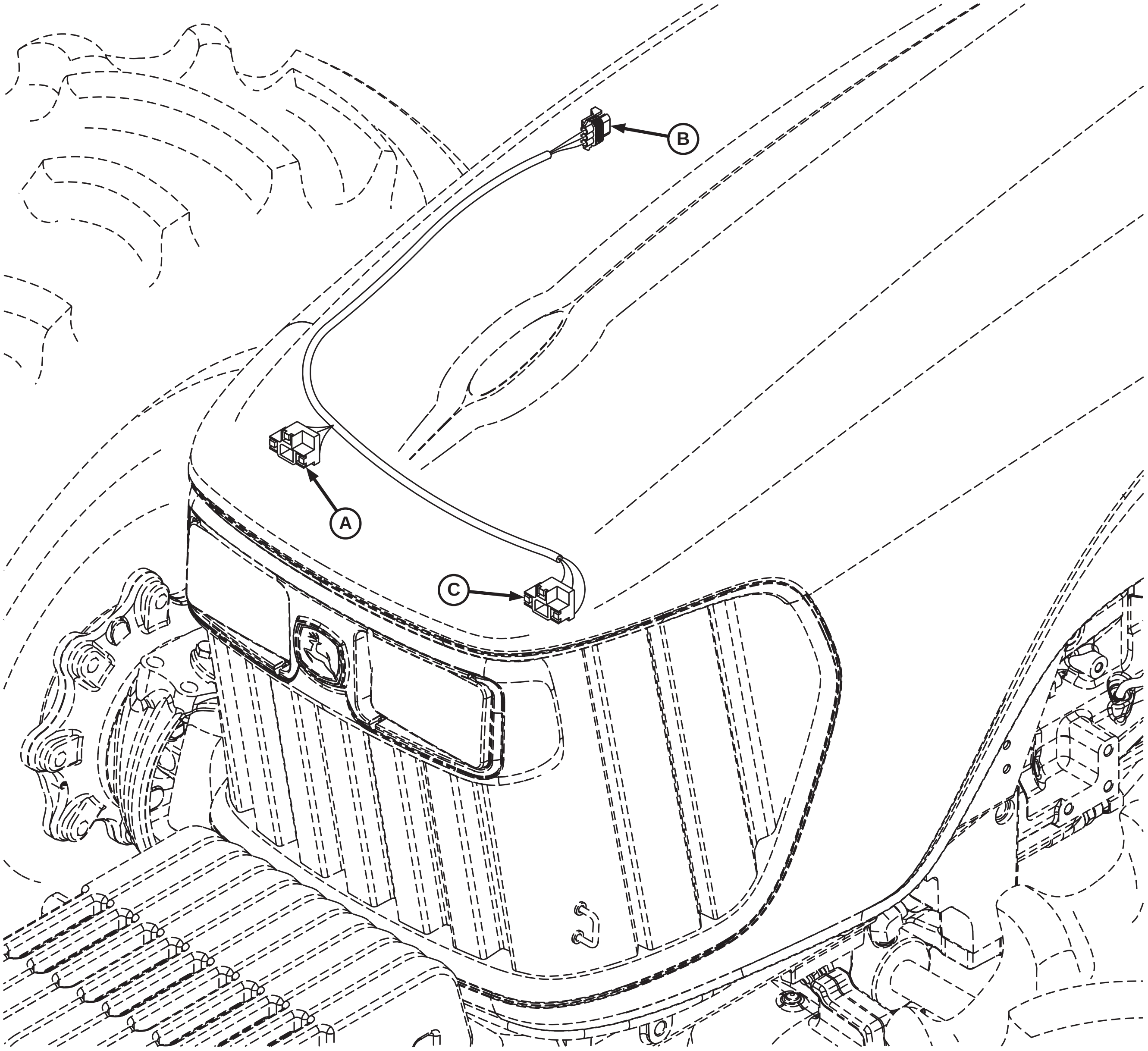
A—Locking Tab



RW77140 –UN–07DEC98

JG31785,000022D –19–01DEC04–6/6

Replace Headlight Wiring Harness



LV10930 –UN–10DEC04

A—Right Headlight Connector **B—Engine Harness Connector** **C—Left Headlight Connector**

1. Disconnect battery negative (—) cable.
2. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)
3. Cut all tie straps.
4. Disconnect wire connectors (A—C).
5. Replace wire harness.
6. Connect wire connectors (A—C).
7. Install tie straps as needed.
8. Install hood. (See Remove and Install Hood in Section 80, Group 25.)

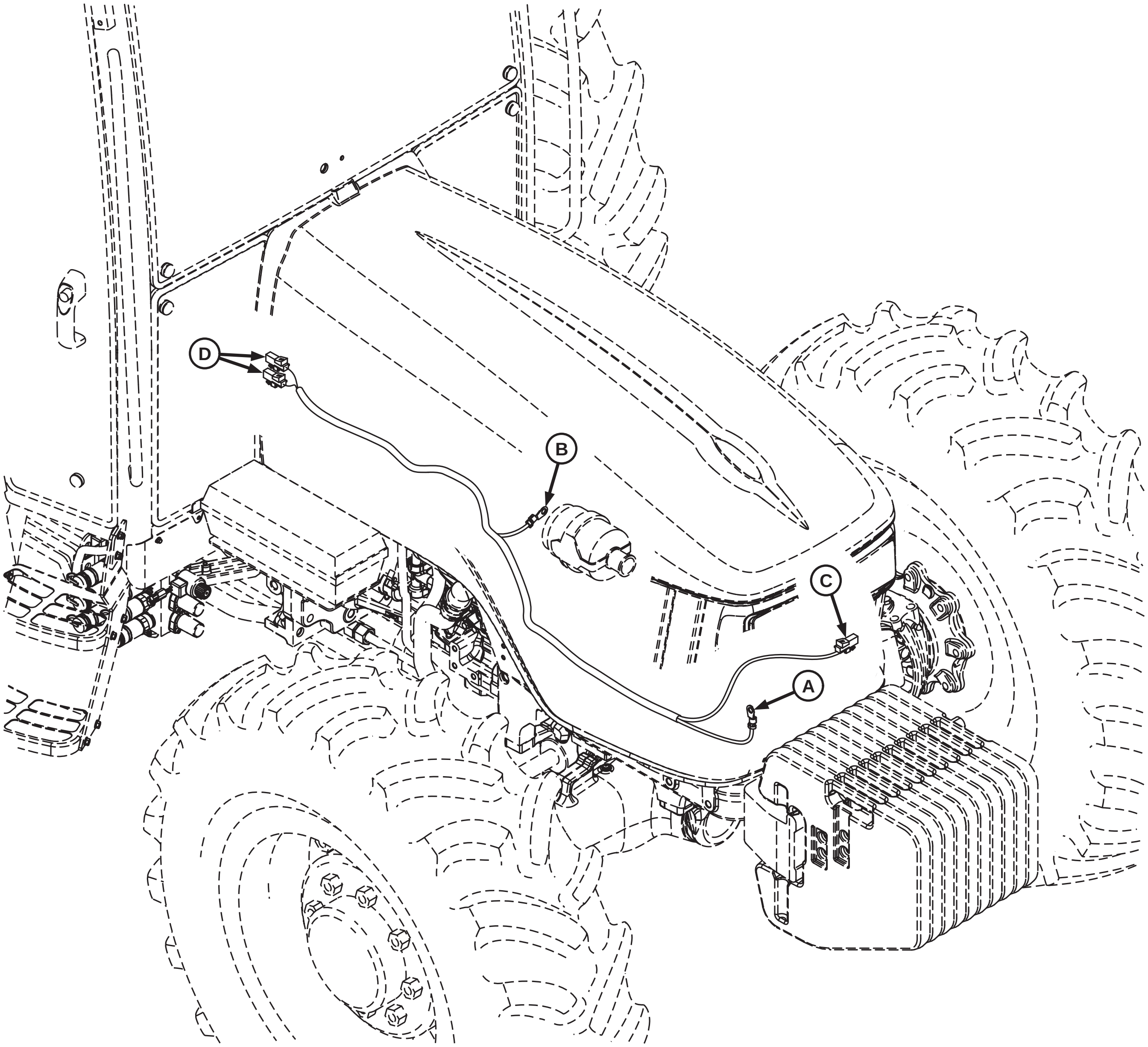
Continued on next page

JG31785,0000200 –19–18NOV04–1/2

9. Connect battery negative (—) cable.

JG31785,0000200 –19–18NOV04–2/2

Replace Fused Power Wiring Harness



A—Fused Power Lead
B—Alternator Lead
C—Engine Power Connector
D—Harness-to-Rear Harness Connectors

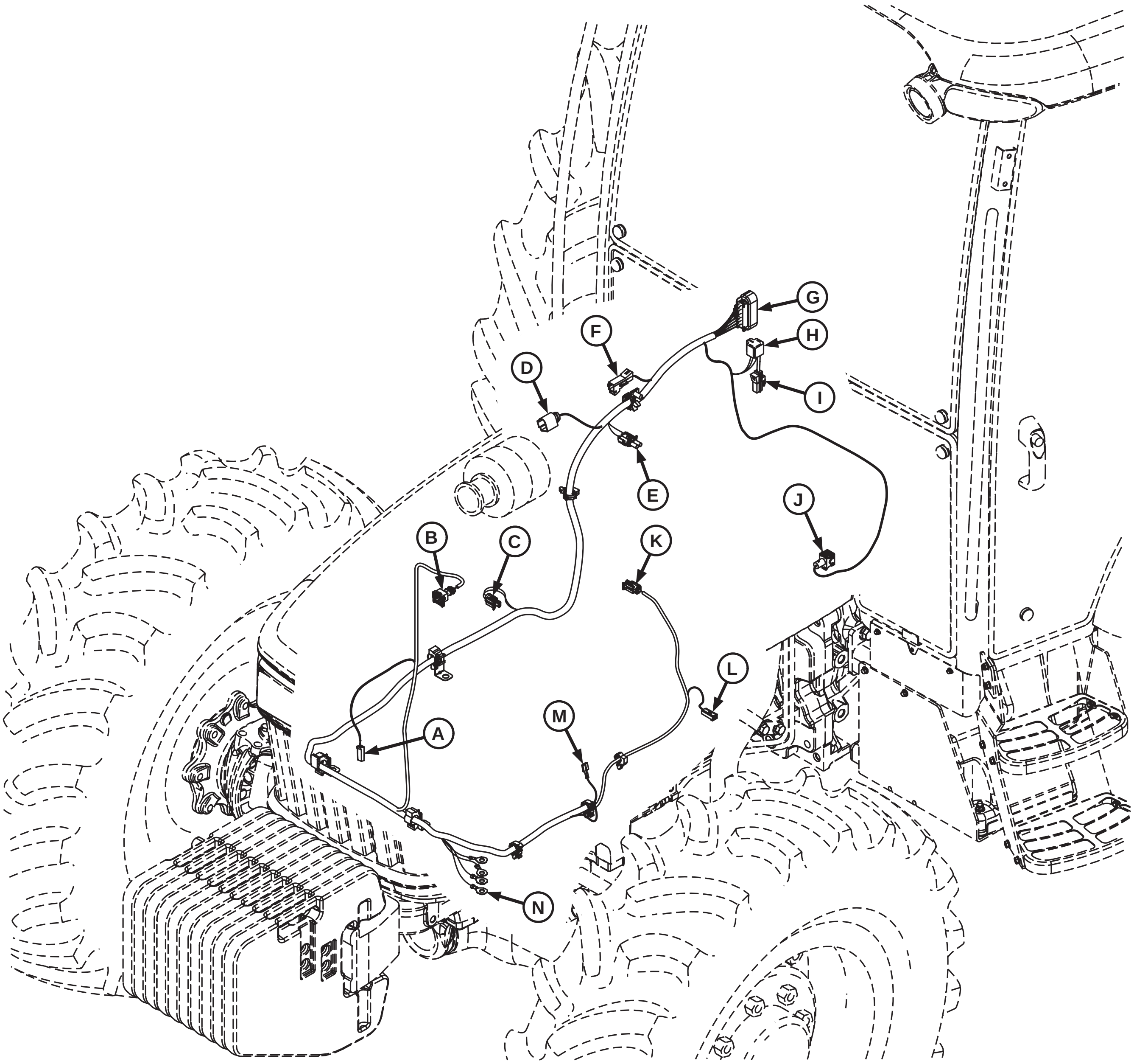
1. Disonnect battery negative (—) cable.
2. Cut all tie straps.
3. Remove hold-down clamp.
4. Disconnect wire connectors and leads (A—D).
5. Replace wire harness.
6. Connect wire connector and leads (A—D).
7. Install hold-down clamp.
8. Instal tie straps as necessary.

Continued on next page

9. Connect battery negative (—) cable.

JG31785,0000201 –19–18NOV04–2/2

Replace Engine Wiring Harness—5-Cylinder



A—Horn Connector (Optional)
B—Air Filter Restriction Sensor Connector
C—Engine MPU
D—Alterantor Charge Indicator Connector
E—Fuel Shut-Off Solenoid Connector
F—Engine Power Connector
G—Front Harness-to-Console Harness Connector
H—Glow Plug Relay
I—Glow Plug Connector
J—Starter Motor Solenoid Connector
K—Coolant Temperature Sensor Connector
L—Engine Oil Pressure Sensor Connector
M—Radiator Core Ground
N—Ground Leads

1. Disconnect battery negative (—) cable.
2. Cut all tie straps.
3. Remove all hold-down clamps.
4. Disconnect wire connectors and leads (A—N).

Continued on next page

5. Replace wire harness.

6. Connect wire connectors and leads (A—N).

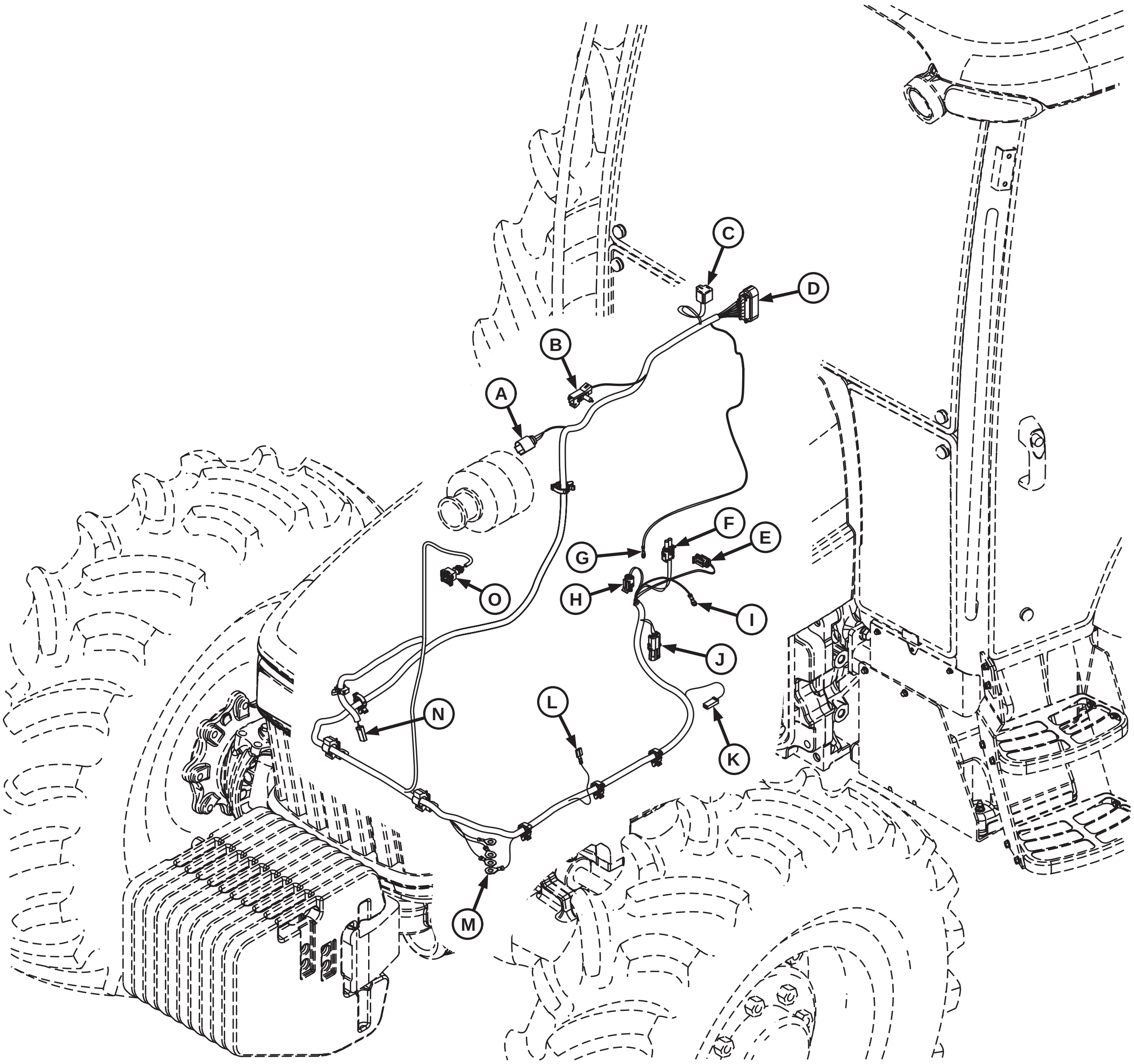
7. Install hold-down clamps.

8. Install tie straps as necessary.

9. Connect battery negative (—) cable.

JG31785,0000202 –19–08NOV06–2/2

Replace Engine Wiring Harness—4-Cylinder



A—Alternator Charge Indicator Connector
B—Air Preheater Connector (Optional)
C—Air Preheater Relay Connector (Optional)
D—Front Harness-to-Console Harness Connector
E—Engine MPU Connector
F—Cold Advance Temperature Switch Connector
G—Starter Motor Solenoid Connector
H—Coolant Temperature Sensor Connector
I—Fuel Shut-Off Solenoid Connector
J—Cold Advance Switch Connector
K—Engine Oil Pressure Sensor Connector
L—Radiator Core Ground Lead
M—Ground Lead (4 used)
N—Horn Connector (Optional)
O—Air Filter Restriction Sensor Connector

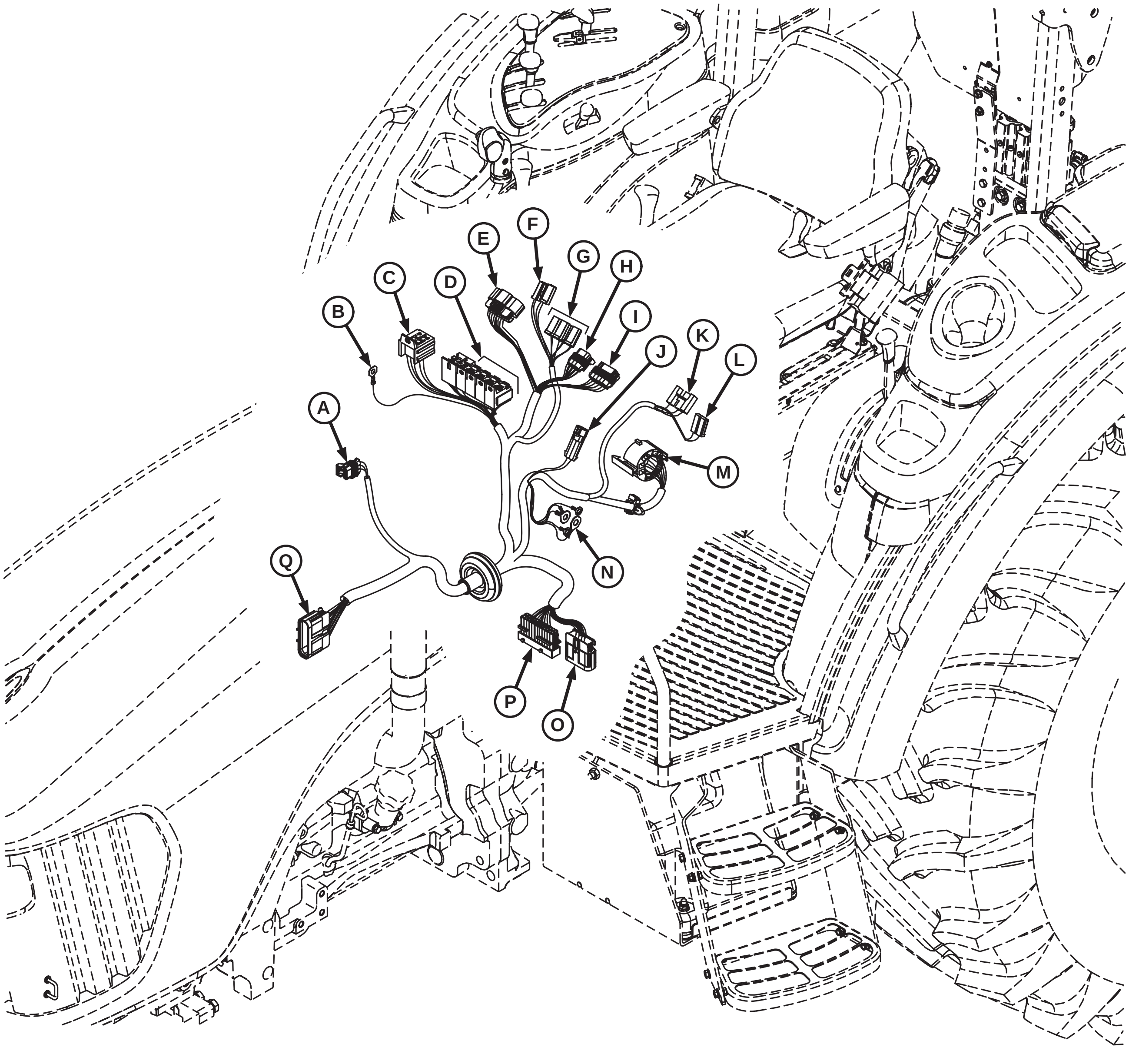
1. Disconnect battery negative (—) cable.
2. Cut all tie straps.
3. Remove all hold-down clamps.
4. Disconnect wire connectors and leads (A—O).

Continued on next page

5. Replace wire harness.
6. Connect wire connectors and leads (A—O).
7. Install hold-down clamps.
8. Install tie straps as necessary.
9. Connect battery negative (—) cable.

JG31785,0000203 –19–21NOV06–2/2

Replace Console Wiring Harness, Isolated Open Operator Station—SYNCSHUTTLE™ Transmission



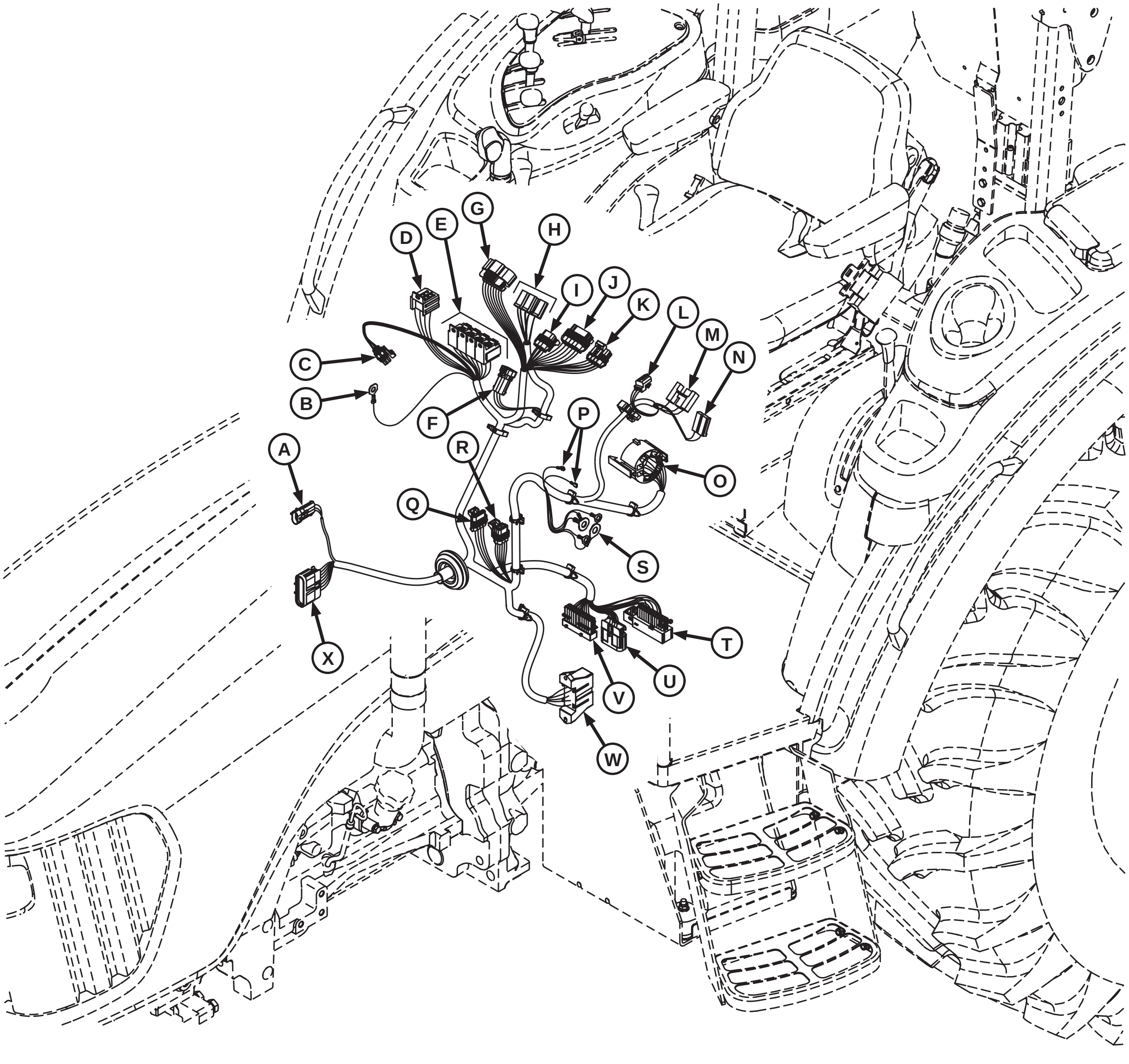
A—Console Harness-to-Headlamp Harness Connector
B—Ground Lead
C—Diode
D—Relay (4 used)
E—Instrument Panel Connector
F—MFWD Switch Connector
G—Light Switch Connector
H—Instrument Panel Connector
I—Instrument Panel Connector
J—Warning Horn Connector
K—Turn Signal Switch Connector
L—Horn Switch Connector
M—Key Switch Connector
N—Start Relay Leads
O—Console Harness-to-Rear Harness Connector
P—Console Harness-to-Rear Harness Connector
Q—Console Harness-to-Front Harness Connector

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

1. Disconnect battery negative (—) cable.
2. Remove instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)
3. Remove key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)
4. Cut all tie straps.
5. Remove all hold-down clamps.
6. Disconnect wire connectors and leads (A—Q).
7. Replace wire harness.
8. Connect wire connectors and leads (A—Q).
9. Install hold-down clamps.
10. Install tie straps as necessary.
11. Install key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)
12. Install instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)
13. Connect battery negative (—) cable.

Replace Console Wiring Harness, Isolated Open Operator Station—POWRREVERSER™ Transmission



LV10935 –UN–14DEC04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

OUO1023,0002A7E –19–14DEC06–1/2

Wiring Harness

A—Console Harness-to-Headlamp Harness Connector
B—Ground Lead
C—Brake Switch Connector
D—Diode
E—Relay (4 used)
F—MFWD Switch Connector
G—Instrument Panel Connector
H—Light Switch Connector
I—Instrument Panel Connector
J—Instrument Panel Connector
K—Instrument Panel Connector
L—Power Shuttle Control Switch
M—Turn Signal Switch Connector
N—Horn Switch Connector
O—Key Switch Connector
P—Warning Horn Leads
Q—Electro-Hydraulic Directional Reverser Connector
R—Clutch Assembly Connector
S—Start Relay Leads
T—Console Harness-to-Rear Harness Connector
U—Console Harness-to-Rear Harness Connector
V—Console Harness-to-Rear Harness Connector
W—Fuse Holder
X—Console Harness-to-Front Harness Connector

1. Disconnect battery negative (—) cable.

2. Remove instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)

3. Remove key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)

4. Cut all tie straps.

5. Remove all hold-down clamps.

6. Disconnect wire connectors and leads (A—X).

7. Replace wire harness.

8. Connect wire connectors and leads (A—X).

9. Install hold-down clamps.

10. Install tie straps as necessary.

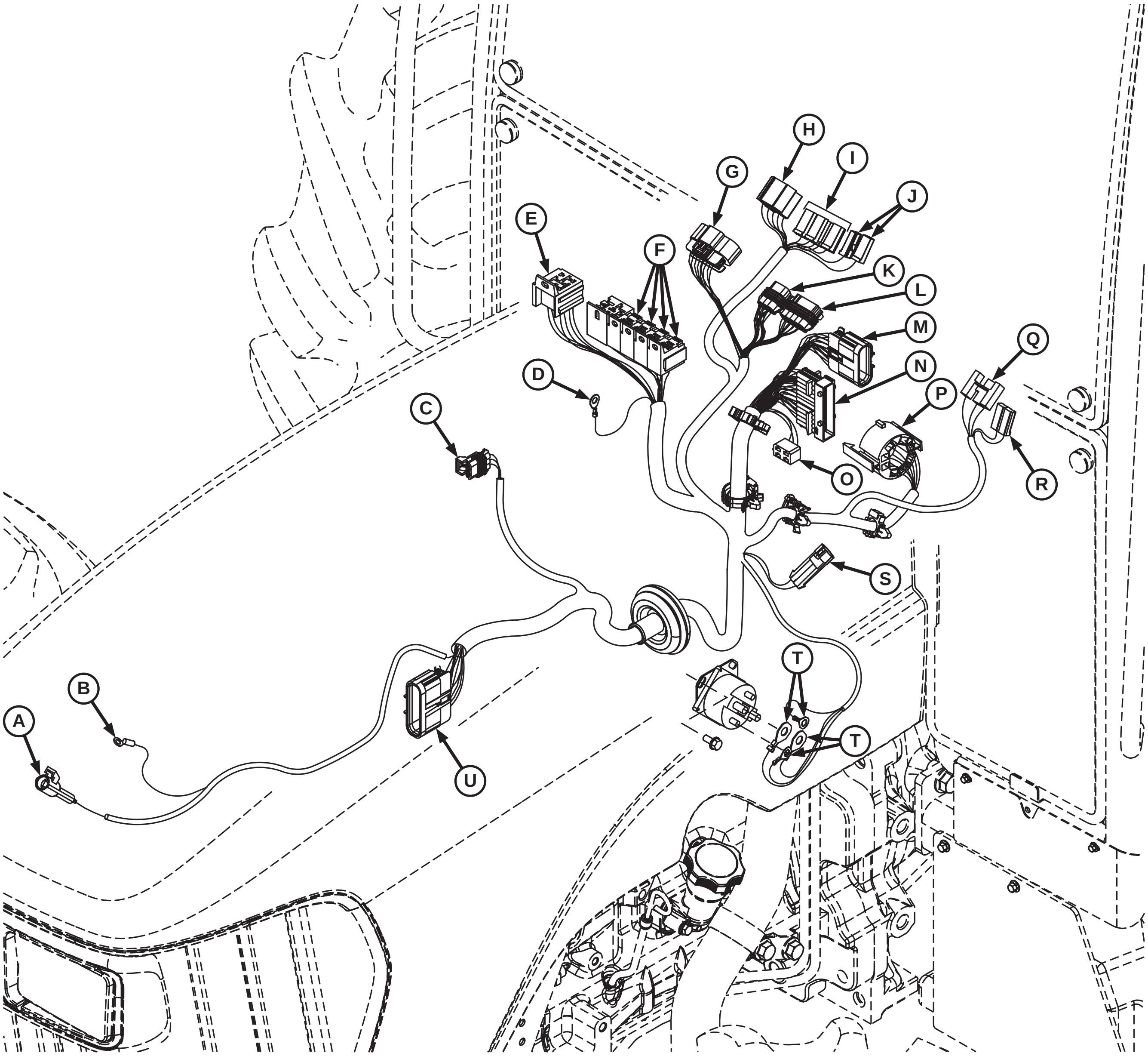
11. Install key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)

12. Install instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)

13. Connect battery negative (—) cable.

OUO1023,0002A7E –19–14DEC06–2/2

Replace Console Wiring Harness, Cab Tractors—SYNCSHUTTLE™ Transmission



A—A/C Compressor Clutch Connector	**F—Relay (4 used)**	**L—Instrument Panel Connector**	**P—Key Switch Connector**
B—A/C Compressor Clutch Ground Lead	**G—Instrument Panel Connector**	**M—Console Harness-to-Rear Harness Connector**	**Q—Turn Signal Switch Connector**
C—Console Harness-to-Headlamp Harness Connector	**H—Front Wiper Switch Connector**	**N—Console Harness-to-Rear Harness Connector**	**R—Horn Switch Connector**
D—Ground Lead	**I—Light Switch Connector**	**O—Front Wiper Motor Connector**	**S—Warning Horn Connector**
E—Diode	**J—Horn Switch Connector**		**T—Start Relay Leads**
	K—Instrument Panel Connector		**U—Console Harness-to-Front Harness Connector**

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

1. Disconnect battery negative (—) cable.

2. Remove instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)

3. Remove key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)

4. Cut all tie straps.

5. Remove all hold-down clamps.

6. Disconnect wire connectors and leads (A—U).

7. Replace wire harness.

8. Connect wire connectors and leads (A—U).

9. Install hold-down clamps.

10. Install tie straps as necessary.

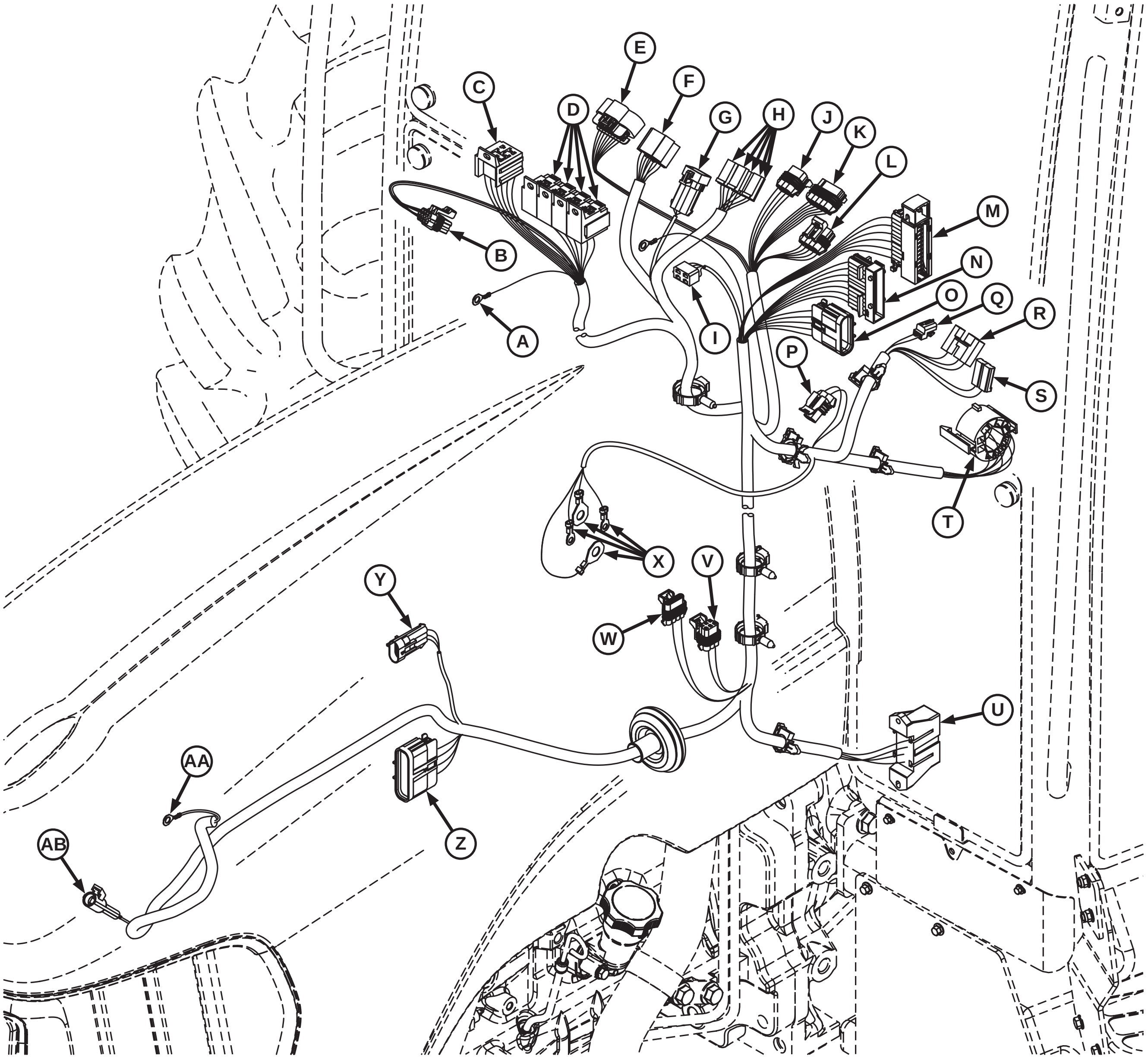
11. Install key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)

12. Install instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)

13. Connect battery negative (—) cable.

OUO1023,0002A7F –19–14DEC06–2/2

Replace Console Wiring Harness, Cab Tractors—POWRREVERSER™ Transmission


E
C
F
D
G
H
J
K
L
M
B
N
O
Q
R
A
I
P
S
T
X
V
Y
W
U
AA
AB
Z
LV10937 –UN–28FEB05

POWRREVERSER is a trademark of Deere & Company

Continued on next page

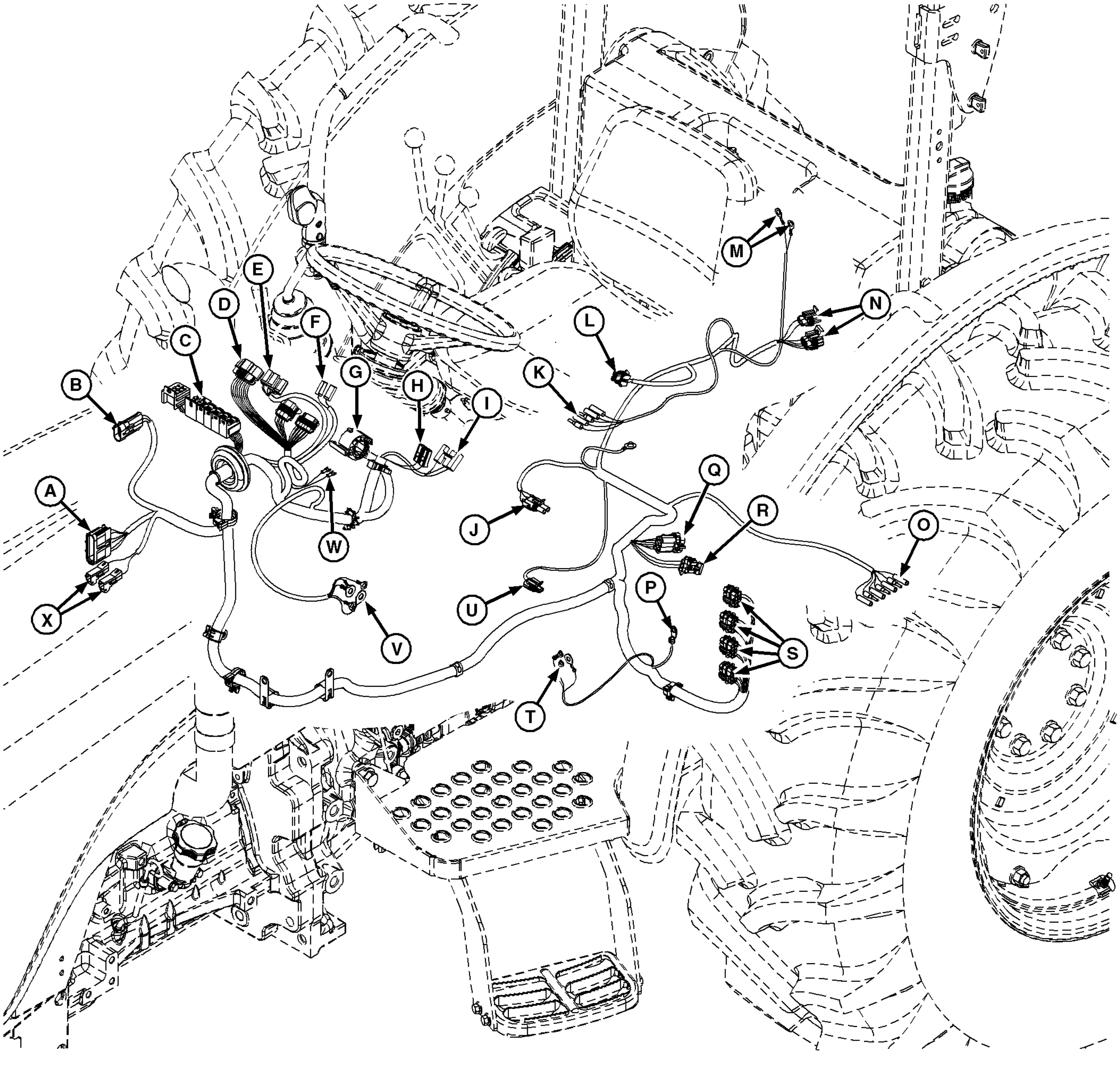
OUO1023,0002A80 –19–14DEC06–1/2

A—Ground Lead
B—Brake Switch Connector
C—Diode
D—Relay (4 used)
E—Instrument Panel Connector
F—Front Wiper Switch Connector
G—MFWD Switch Connector
H—Light Switch Connector
I—Front Wiper Motor Connector
J—Instrument Panel Connector
K—Instrument Panel Connector
L—Instrument Panel Connector
M—Console Harness-to-Rear Harness Connector
N—Console Harness-to-Rear Harness Connector
O—Console Harness-to-Rear Harness Connector
P—Warning Horn Connector
Q—Power Shuttle Control Switch Connector
R—Turn Signal Switch Connector
S—Horn Switch Connector
T—Key Switch Connector
U—Fuse Holder
V—Clutch Assembly Connector
W—Electro-Hydraulic Directional Reverser Switch Connector
X—Starter Relay Leads
Y—Console Harness-to-Headlamp Harness Connector
Z—Console Harness-to-Front Harness Connector
AA—A/C Compressor Clutch Ground Lead
AB—A/C Compressor Clutch Connector

1. Disconnect battery negative (—) cable.
2. Remove instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)
3. Remove key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Secton 40, Group 10.)
4. Cut all tie straps.
5. Remove all hold-down clamps.
6. Disconnect wire connectors and leads (A—AB).
7. Replace wire harness.
8. Connect wire connectors and leads (A—AB).
9. Install hold-down clamps.
10. Install tie straps as necessary.
11. Install key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)
12. Install instrument panel. (See Replace Instrument Panel—Isolated Open Operator Station and Cab Tractors in Section 40, Group 10.)
13. Connect battery negative (—) cable.

OUO1023,0002A80 –19–14DEC06–2/2

Replace Rear Wiring Harness, Straddle Mount—SYNCSHUTTLE™ Transmission


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
LV10938 –UN–30NOV04

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

OUO1023,0002A81 –19–14DEC06–1/2

A—Rear Harness to Engine Harness Connector
B—Rear Harness to Front Harness Connector
C—Relay Connector (4 used)
D—Instrument Panel Connector (3 used)
E—Light Switch Connector
F—MFWD Switch Connector
G—Key Switch Connector
H—Horn Connector
I—Turn Signal Switch Connector
J—Neutral Start Switch Connector
K—Right Turn/Tail Lamp Connectors
L—Start Switch Connector
M—Fuel Level Sender Leads
N—7-Pin Trailer Connector (2 used)
O—Left Turn/Tail Lamp Connectors
P—Ground Lead (2 used)
Q—PTO Switch Connector
R—Wheel Speed Sensor Connector
S—VEC Connector (4 used)
T—Junction Block Leads
U—MFWD Solenoid Connector
V—Starter Relay Leads
W—Warning Horn Leads
X—Power Cable Connectors

1. Disconnect battery negative (—) cable.

2. Remove instrument panel. (See Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)

3. Remove key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)

4. Remove left-side console cover.

5. Cut all tie straps.

6. Remove all hold-down clamps.

7. Disconnect wire connectors and leads (A—X).

8. Replace wire harness.

9. Connect wire connectors and leads (A—X).

10. Install hold-down clamps.

11. Install tie straps as necessary.

12. Install left-side console cover.

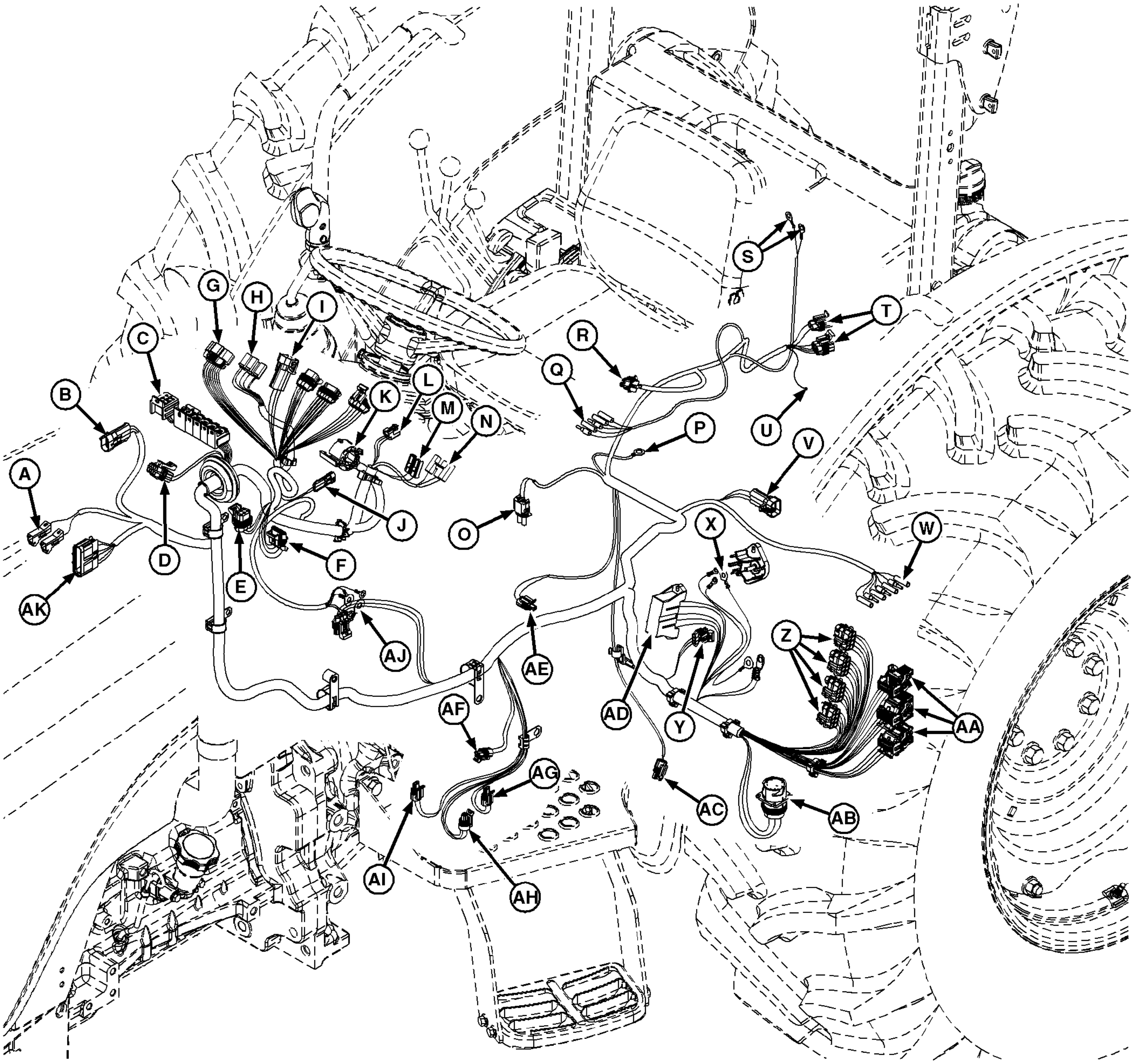
13. Install key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)

14. Install instrument panel. (See Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)

15. Connect battery negative (—) cable.

OUO1023,0002A81 –19–14DEC06–2/2

Replace Rear Wiring Harness, Straddle Mount—POWRREVERSER™ Transmission


S
T
R
Q
U
G
H
I
C
L
K
M
B
N
P
V
A
J
O
X
W
D
F
E
AK
Z
AJ
AE
AA
AF
AD
Y
AG
AC
AB
AI
AH

LV10939 –UN–28FEB05

POWRREVERSER is a trademark of Deere & Company

Continued on next page

OUO1023,0002A82 –19–14DEC06–1/2

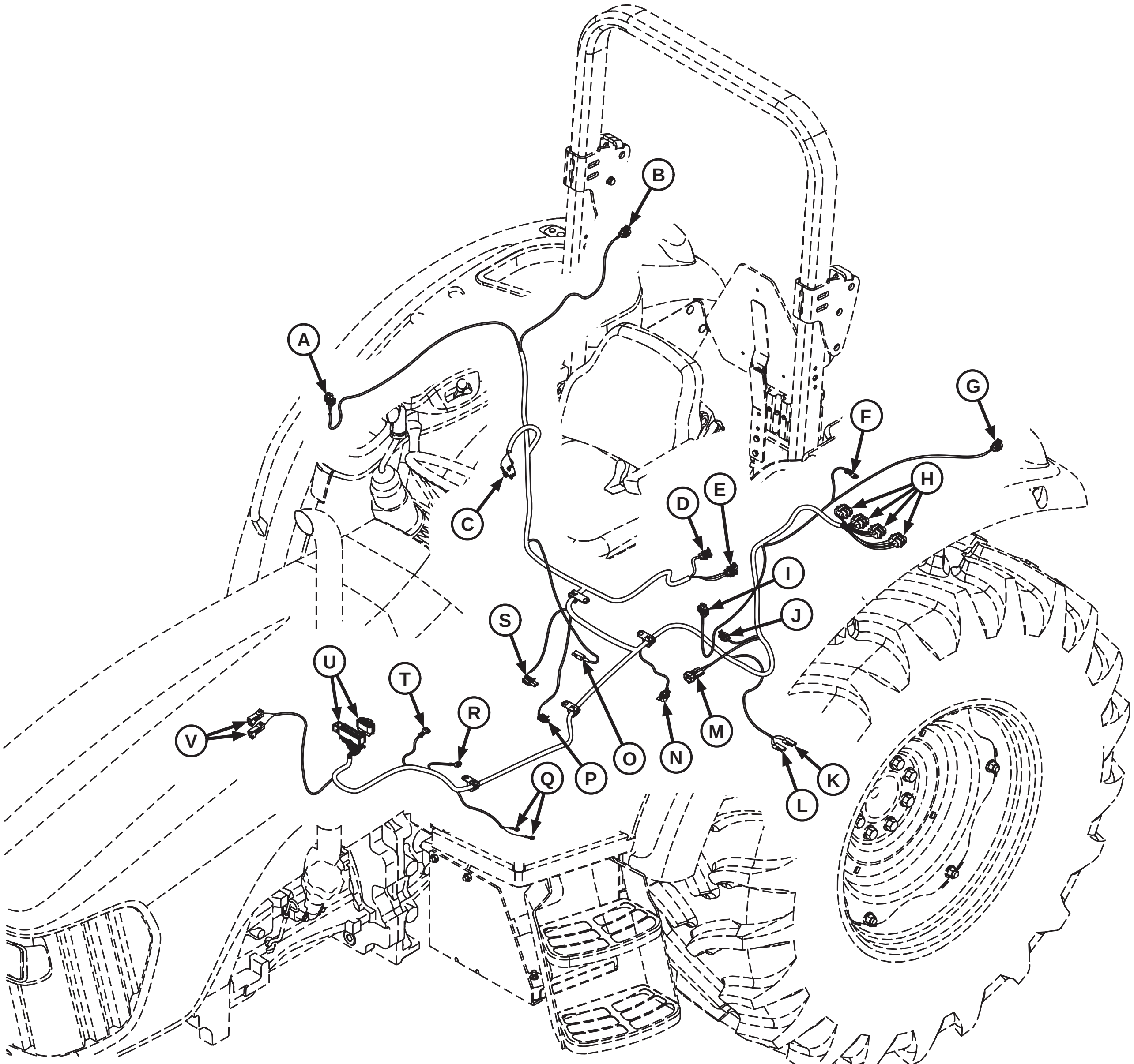
Wiring Harness

A—Power Cable Connectors
B—Rear Harness to Front Harness Connector
C—Relay (4 used)
D—Brake Switch Connector
E—Clutch Assembly Connector
F—Electro-Hydraulic Directional Reverser Switch Connector
G—Instrument Panel Connector (4 used)
H—Light Switch Connector
I—MFWD Switch Connector
J—Warning Horn Connector
K—Key Switch Connector
L—Power Shuttle Control Switch
M—Horn Switch Connector
N—Turn Signal Switch Connector
O—Park Sensor Connector
P—Ground Lead (3 used)
Q—Right Turn/Tail Lamp Connectors
R—Seat Switch Connector
S—Fuel Level Sender Leads
T—7-Pin Trailer Connector (2 used)
U—Back-Up Alarm Connector
V—PTO Switch Connector
W—Left Turn/Tail Lamp Connectors
X—Junction Block Leads
Y—Wheel Speed Sensor Connector
Z—VEC Connectors (4 used)
AA—EHC Connectors (3 used)
AB—Service Advisor Connector
AC—MFWD Solenoid Connector
AD—Fuse Holder
AE—Hydraulic Oil Temperature Connector
AF—Clutch Enable Valve Connector
AG—Forward Solenoid Connector
AH—Pressure Transducer Connector
AI—Reverse Solenoid Connector
AJ—Start Relay Leads
AK—Rear Harness to Engine Harness Connector

1. Disconnect battery negative (—) cable.
2. Remove instrument panel. (See Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)
3. Remove key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)
4. Remove left-side console cover.
5. Cut all tie straps.
6. Remove all hold-down clamps.
7. Disconnect wire connectors and leads (A—AK).
8. Replace wire harness.
9. Connect wire connectors and leads (A—AK).
10. Install hold-down clamps.
11. Install tie straps as necessary.
12. Install left-side console cover.
13. Install key switch. (See Replace Key Switch—5225, 5325, 5425, 5525 and 5625 Tractors in Section 40, Group 10.)
14. Install instrument panel. (See Replace Instrument Panel—Straddle Mount in Section 40, Group 10.)
15. Connect battery negative (—) cable.

OUO1023,0002A82 –19–14DEC06–2/2

Replace Rear Wiring Harness, Isolated Open Operator Station—SYNCSHUTTLE™ Transmission



LV10940 –UN–14DEC04

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

JG31785,000020A –19–18NOV04–1/2

Wiring Harness

A—Right Fender Flood Lamp Connector
B—Right Tail/Turn Lamp Connector
C—Junction Block Leads
D—7-Pin Trailer Connector
E—7-Pin Trailer Connector
F—VEC Power Lead
G—Left Tail/Turn Lamp Connector
H—VEC Connector (4 used)
I—Left Fender Flood Lamp Connector
J—Seat Switch Connector
K—Rear Work Lamp Connector
L—Left Warning Lamp Connector
M—PTO Switch Connector
N—Wheeel Speed Sensor Connector
O—Right Warning Lamp Connector
P—MFWD Solenoid Connector
Q—Fuel Level Sender Leads
R—Ground Lead (Platform)
S—Neutral Start Switch Connector
T—Ground Lead (Transmission)
U—Rear Harness-to-Console Harness Connector
V—Leads-to-Power Cables

1. Disconnect battery negative (—) cable.

2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors in Section 90, Group 06.)

3. Cut all tie straps.

4. Remove all hold-down clamps.

5. Disconnect wire connectors and leads (A—V).

6. Replace wire harness.

7. Connect wire connectors and leads (A—V).

8. Install hold-down clamps.

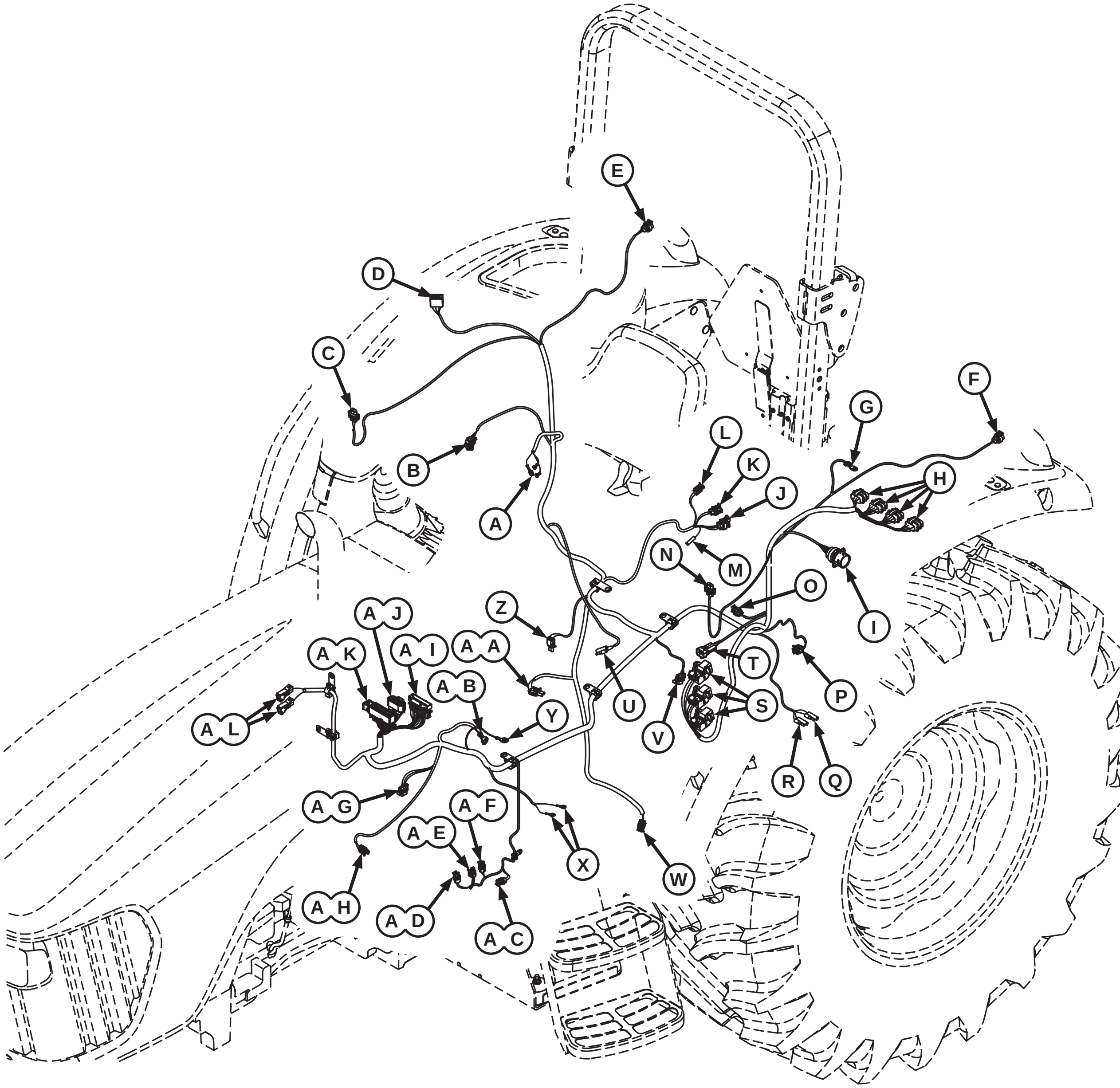
9. Install tie straps as necessary.

10. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors in Section 90, Group 06.)

11. Connect battery negative (—) cable.

JG31785,000020A –19–18NOV04–2/2

Replace Rear Wiring Harness, Isolated Open Operator Station, Mechanical Hitch—POWRREVERSER™ Transmission


E
D
C
F
G
L
K
H
J
B
A
N
M
O
I
Z
AJ
AK
AI
AA
T
S
P
AB
AL
Y
U
V
R
Q
AG
AF
AE
X
W
AH
AD
AC

LV10941 –UN–14DEC04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

JG31785,000020B –19–18NOV04–1/2

A—Junction Block Leads
B—Hi/Lo Joystick Connector
C—Right Fender Flood Lamp Connector
D—Rear PTO Switch Connector
E—Right Tail/Turn Lamp Connector
F—Left Tail/Turn Lamp Connector
G—VEC Power Lead
H—VEC Connector (4 used)
I—Service Advisor Connector
J—7-Pin Trailer Connector
K—7-Pin Trailer Connector
L—Electro-Hydraulic PTO Solenoid Connector
M—Back-Up Alarm Connector
N—Left Fender Flood Lamp Connector
O—Seat Switch Connector
P—Electro-Hydraulic PTO Speed Sensor Connector
Q—Rear Work Lamp Connector
R—Left Warning Lamp Connector
S—EHC Connector (3 used)
T—PTO Switch Connector
U—Right Warning Lamp Connector
V—Wheel Speed Sensor Connector
W—Hydraulic Oil Temperature Sensor Connector
X—Fuel Level Sender Leads
Y—Ground Lead (Platform)
Z—Park Sensor Connector
AA—MFWD Solenoid Connector
AB—Ground Lead (Transmission)
AC—Clutch Enable Valve Connector
AD—Forward Solenoid Connector
AE—Pressure Transducer Connector
AF—Reverse Solenoid Connector
AG—Top Shaft Speed Sensor Connector
AH—Hi Solenoid Connector
AI—Rear Harness-to-Console Harness Connector
AJ—Rear Harness-to-Console Harness Connector
AK—Rear Harness-to-Console Harness Connector
AL—Leads to Power Cables

1. Disconnect battery negative (—) cable.

2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors in Section 90, Group 06.)

3. Cut all tie straps.

4. Remove all hold-down clamps.

5. Disconnect wire connectors and leads (A—AL).

6. Replace wire harness.

7. Connect wire connectors and leads (A—AL).

8. Install hold-down clamps.

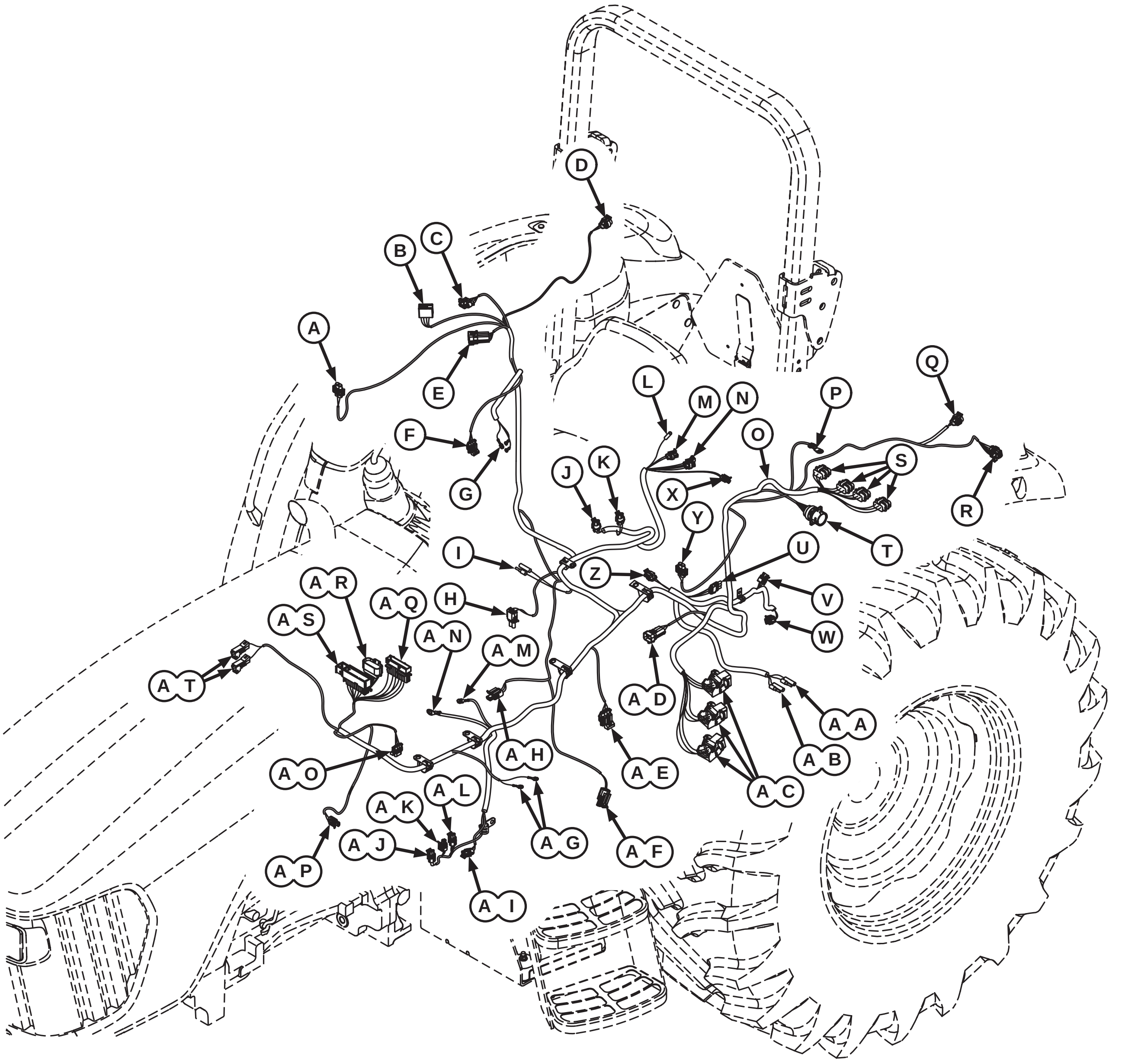
9. Install tie straps as necessary.

10. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors in Section 90, Group 06.)

11. Connect battery negative (—) cable.

JG31785,000020B –19–18NOV04–2/2

Replace Rear Wiring Harness, Isolated Open Operator Station, Electro-Hydraulic Hitch—POWRREVERSER™ Transmission


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB
AC
AD
AE
AF
AG
AH
AI
AJ
AK
AL
AM
AN
AO
AP
AQ
AR
AS
AT

LV10942 —UN–14DEC04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

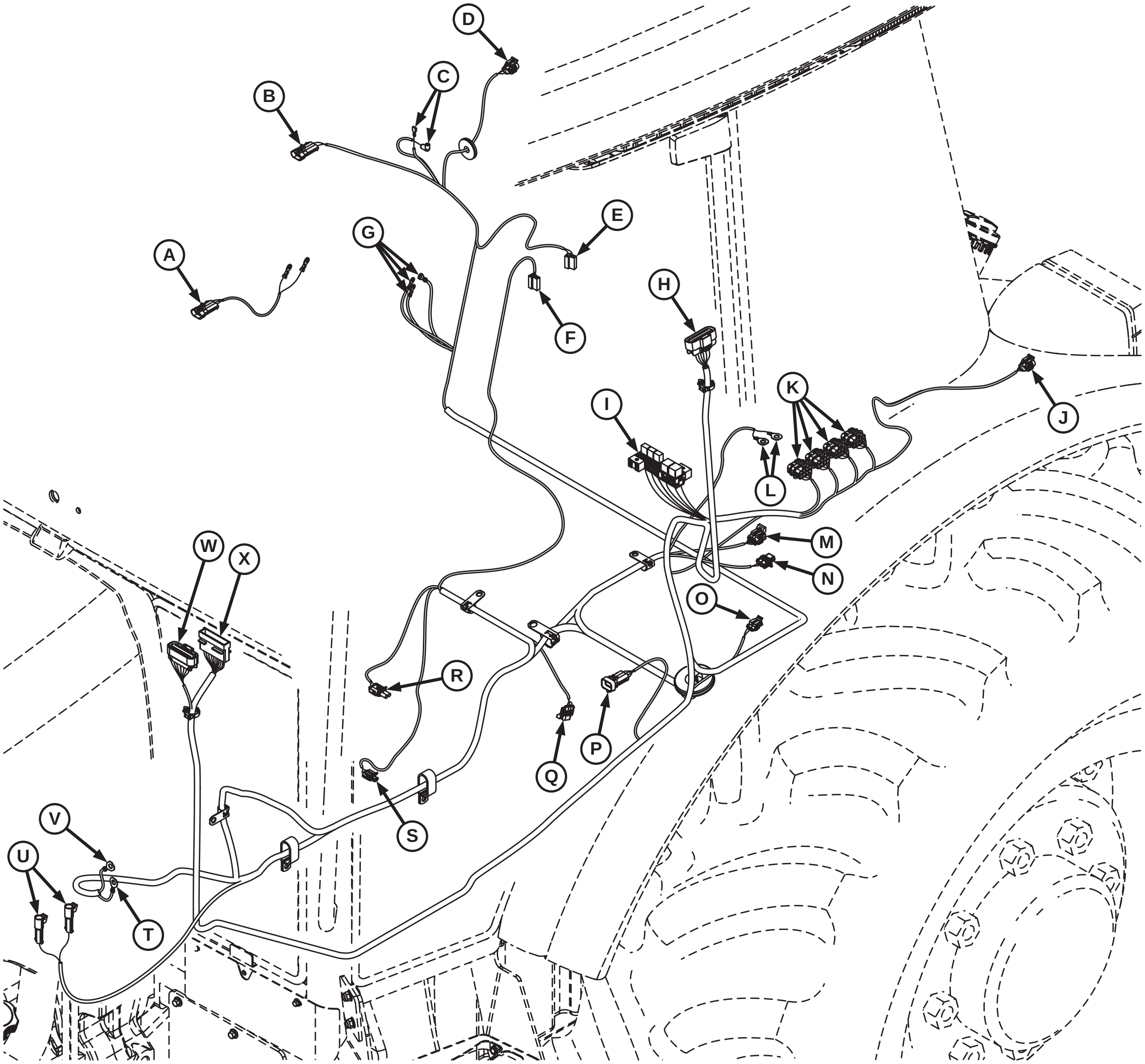
JG31785,000020C –19–18NOV04–1/2

A—Right Fender Flood Lamp Connector
B—Rear PTO Switch Connector
C—Load Depth Sensor Connector
D—Right Tail/Turn Lamp Connector
E—Hitch Raise/Lower Assembly Connector
F—Hi/Lo Joystick Connector
G—Junction Block Leads
H—Park Sensor Connector
I—Right Warning Lamp Connector
J—Hitch Lower Solenoid Connector
K—Hitch Raise Solenoid Connector
L—Back-Up Alarm Connector
M—Electro-Hydraulic PTO Solenoid Connector
N—7-Pin Trailer Connector
O—Wire Harness
P—VEC Power Lead
Q—Left Tail/Turn Lamp Connector
R—Left External Hitch Switch Connector
S—VEC Connector (4 used)
T—Service Advisor Connector
U—Hitch Feedback Sensor Connector
V—Hitch Draft Sensor Connector
W—Electro-Hydraulic PTO Speed Sensor Connector
X—7-Pin Trailer Connector
Y—Left Fender Flood Lamp Connector
Z—Seat Switch Connector
AA—Rear Work Lamp Connector
AB—Left Warning Lamp Connector
AC—EHC Connector (3 used)
AD—PTO Switch Connector
AE—Wheel Speed Sensor Connector
AF—MFWD Solenoid Connector
AG—Fuel Level Sender Leads
AH—Hydraulic Oil Temperature Sensor Connector
AI—Clutch Enable Valve Connector
AJ—Forward Solenoid Connector
AK—Pressure Transducer Connector
AL—Reverse Solenoid Connector
AM—Ground Lead (Platform)
AN—Ground Lead (Transmission)
AO—Top Shaft Speed Sensor Connector
AP—Hi Solenoid Connector
AQ—Rear Harness-to-Console Harness Connector
AR—Rear Harness-to-Console Harness Connector
AS—Rear Harness-to-Console Harness Connector
AT—Leads to Power Cables

1. Disconnect battery negative (—) cable.
2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors in Section 90, Group 06.)
3. Cut all tie straps.
4. Remove all hold-down clamps.
5. Disconnect wire connectors and leads (A—AT).
6. Replace wire harness.
7. Connect wire connectors and leads (A—AT).
8. Install hold-down clamps.
9. Install tie straps as necessary.
10. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors in Section 90, Group 06.)
11. Connect battery negative (—) cable.

JG31785,000020C –19–18NOV04–2/2

Replace Rear Wiring Harness, Cab Tractors—SYNCSHUTTLE™ Transmission



LV10943 –UN–28FEB05

A—Air Seat Compressor Connector
B—Rear Wiper Connector
C—Cigar Lighter Connector
D—Right Tail/Turn Lamp Connector
E—Rear Washer Pump Connector
F—Front Washer Pump Connector
G—Junction Block Leads
H—Rear Harness-to-Roof Harness Connector
I—Electrical Load Center
J—Left Tail/Turn Lamp Connector
K—VEC Connector (4 used)
L—VEC Power Leads
M—7-Pin Trailer Connector
N—7-Pin Trailer Connector
O—Seat Switch Connector
P—PTO Switch Connector
Q—Wheel Speed Sensor Connector
R—Neutral Start Switch Connector
S—MFWD Solenoid Connector
T—Ground Lead (Transmission)
U—Rear Harness-to-Power Cables Connectors
V—Ground Lead (Cab)
W—Rear Harness-to-Console Harness Connector
X—Rear Harness-to-Console Harness Connector

SYNCSHUTTLE is a trademark of Deere & Company

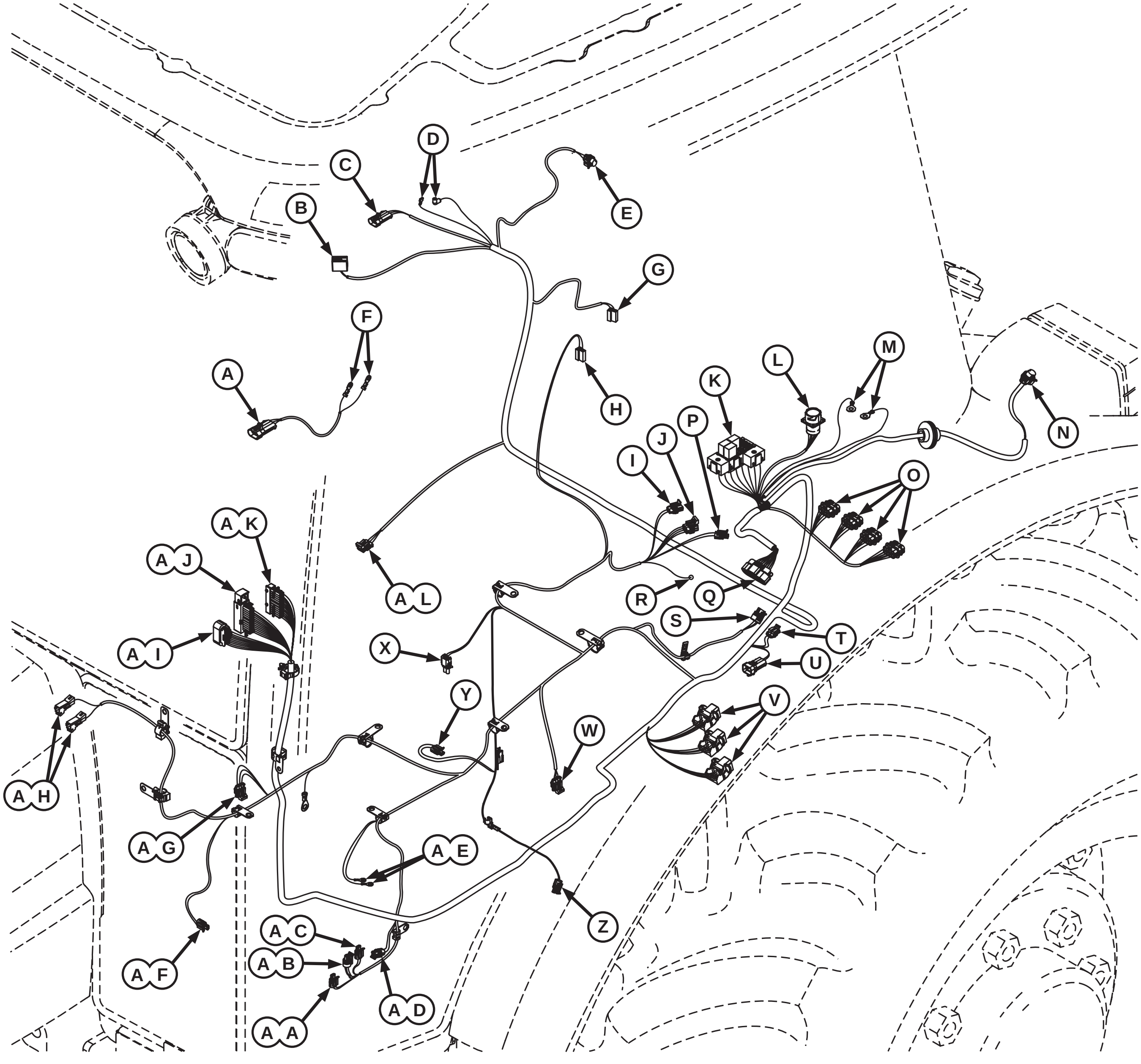
Continued on next page

JG31785,000020D –19–18NOV04–1/2

1. Disconnect negative (—) battery cable.
2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
3. Remove right-side console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)
4. Cut all tie straps.
5. Remove hold-down clamps.
6. Disconnect wire connectors and leads (A—X).
7. Replace wire harness.
8. Connect wire connectors and leads (A—X).
9. Install hold-down clamps.
10. Install tie straps as necessary.
11. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)
12. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
13. Connect battery negative (—) cable.

JG31785,000020D –19–18NOV04–2/2

Replace Rear Wiring Harness, Cab Tractors, Mechanical Hitch—POWRREVERSER™ Transmission


D
C
E
B
G
F
A
M
L
K
H
P
J
N
I
O
A K
A J
A L
R
Q
S
A I
X
T
U
Y
V
W
A H
A G
A E
Z
A C
A B
A F
A D
A A
LV10944 –UN–10DEC04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

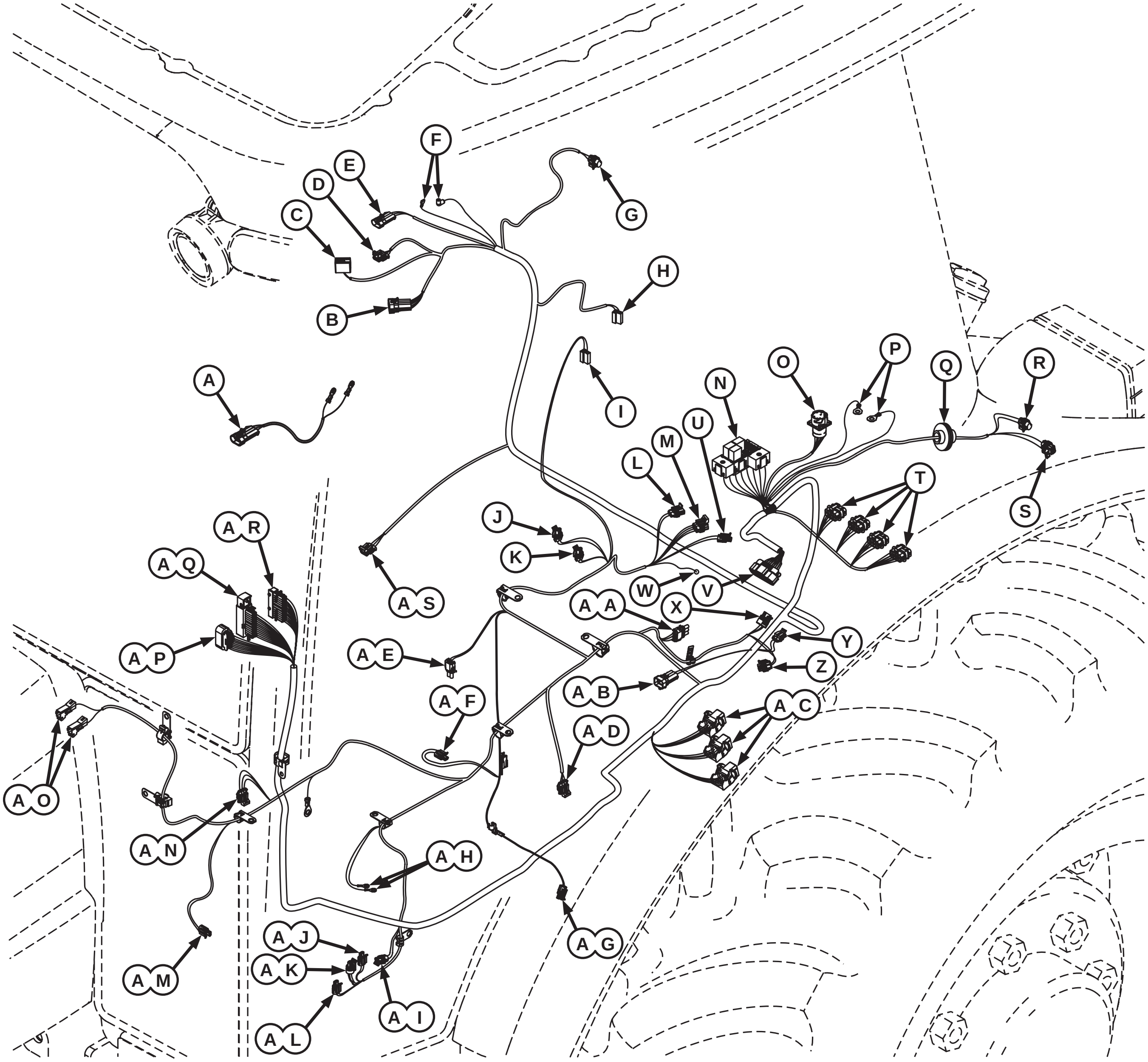
JG31785,000020E –19–18NOV04–1/2

A—Air Seat Compressor Connector
B—Rear PTO Switch Connector
C—Rear Wiper Connector
D—Cigar Lighter Connector
E—Right Tail/Turn Lamp Connector
F—Junction Block Leads
G—Rear Washer Pump Connector
H—Front Washer Pump Connector
I—Electro-Hydraulic PTO Solenoid Connector
J—7-Pin Trailer Connector
K—Electrical Load Center
L—Service Adviser Connector
M—VEC Power Leads
N—Left Tail/Turn Lamp Connector
O—VEC Connector (4 used)
P—7-Pin Trailer Connector
Q—Rear Harness-to-Roof Harness Connector
R—Back-Up Alarm Connector
S—Electro-Hydraulic PTO Speed Sensor Connector
T—Seat Switch Connector
U—PTO Switch Connector
V—EHC Connector
W—Wheel Speed Sensor Connector
X—Park Sensor Connector
Y—Hydraulic Oil Temperature Sensor Connector
Z—MFWD Solenoid Connector
AA—Forward Solenoid Connector
AB—Pressure Transducer Connector
AC—Reverse Solenoid Connector
AD—Clutch Enable Valve Connector
AE—Fuel Level Sender Leads
AF—Hi Solenoid Connector
AG—Top Shaft Speed Sensor Connector
AH—Rear Harness-to-Power Cables Connectors
AI—Rear Harness-to-Console Harness Connector
AJ—Rear Harness-to-Console Harness Connector
AK—Rear Harness-to-Console Harness Connector
AL—Hi/Lo Switch Connector

1. Disconnect battery negative (—) cable.
2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
3. Remove right-side console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)
4. Cut all tie straps.
5. Remove hold-down clamps.
6. Disconnect wire connectors and leads (A—AL).
7. Replace wire harness.
8. Connect wire connectors and leads (A—AL).
9. Install hold-down clamps.
10. Install tie straps as necessary.
11. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)
12. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
13. Connect battery negative (—) cable.

JG31785,000020E –19–18NOV04–2/2

Replace Rear Wiring Harness, Cab Tractors, Electro-Hydraulic Hitch—POWRREVERSER™ Transmission


F
E
D
C
G
H
B
A
I
P
O
N
U
M
L
R
Q
T
S
J
K
AR
AQ
AS
W
V
AA
X
AP
AE
Y
Z
AB
AF
AC
AD
AO
AN
AH
AJ
AK
AG
AM
AI
AL

LV10945 –UN–10DEC04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

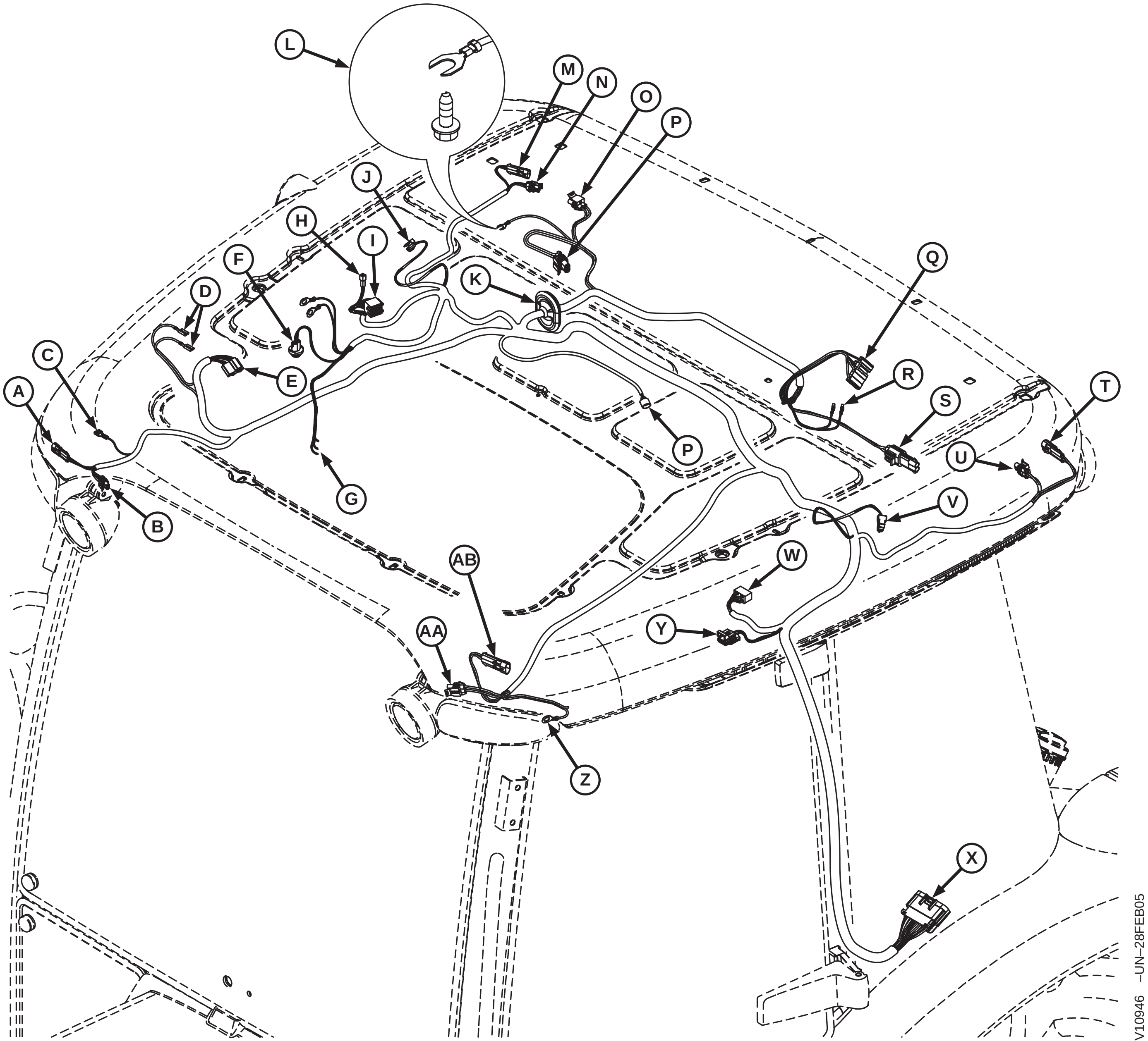
RB14256,0004E73 –19–30SEP04–1/2

A—Air Seat Compressor Connector
B—Hitch Raise/Lower Assembly Connector
C—Rear PTO Switch Connector
D—Load Depth Sensor Connector
E—Rear Wiper Connector
F—Cigar Lighter Connector
G—Right Tail/Turn Lamp Connector
H—Rear Washer Pump Connector
I—Front Washer Pump Connector
J—Hitch Raise Solenoid Connector
K—Hitch Lower Solenoid Connector
L—Electro-Hydraulic PTO Solenoid Connector
M—7-Pin Trailer Connector
N—Electrical Load Center
O—Service Advisor Connector
P—VEC Power Leads
Q—Grommet
R—Left Tail/Turn Lamp Connector
S—Left External Hitch Switch Connector
T—VEC Connector (4 used)
U—7-Pin Trailer Connector
V—Rear Harness-to-Roof Harness Connector
W—Back-Up Alarm Connector
X—Hitch Draft Sensor Connector
Y—Seat Switch Connector
Z—Electro-Hydraulic PTO Speed Sensor Connector
AA—Hitch Feedback Sensor Connector
AB—PTO Switch Connector
AC—EHC Connector (3 used)
AD—Wheel Speed Sensor Connector
AE—Park Sensor Connector
AF—Hydraulic Oil Temperature Sensor Connector
AG—MFWD Solenoid Connector
AH—Fuel Level Sender Leads
AI—Clutch Enable Valve Connector
AJ—Reverse Solenoid Connector
AK—Pressure Transducer Connector
AL—Forward Solenoid Connector
AM—Hi Solenoid Connector
AN—Top Shaft Speed Sensor Connector
AO—Rear Harness-to-Power Cable Leads
AP—Rear Harness-to-Console Harness Connector
AQ—Rear Harness-to-Console Harness Connector
AR—Rear Harness-to-Console Harness Connector
AS—Hi/Lo Switch Connector

1. Disconnect negative (—) battery cable.
2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
3. Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)
4. Cut all tie straps.
5. Remove all hold-down clamps.
6. Disconnect wire connectors and leads (A—AS).
7. Replace wiring harness.
8. Connect wire connectors and leads (A—AS).
9. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
10. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)
11. Install hold-down clamps.
12. Install tie straps as necessary.
13. Connect battery negative (—) cable.

RB14256,0004E73 –19–30SEP04–2/2

Replace Cab Roof Wiring Harness



A—Right Front Flood Lamp Connector
B—Right Front Warning Lamp Connector
C—Antenna Ground Lead
D—A/C On/Off Switch Connector
E—Blower Switch Connector
F—Console Lamp Connector
G—Beacon Lamp Switch Connector
H—Antenna Power Connector
I—Radio Connector
J—Right Speaker Connector
K—Grommet
L—Evaporator Ground Lead
M—Right Rear Warning Lamp Connector
N—Right Rear Flood Lamp Connector
O—A/C Pressure Switch Connector
P—Right Blower Connector
Q—Resistor
R—De-Icing Switch Connector
S—Left Blower Connector
T—Left Rear Warning Lamp Connector
U—Left Rear Flood Lamp Connector
V—Left Speaker Connector
W—Left Door Switch Connector
X—Roof Harness-to-Rear Cab Harness Connector
Y—Dome Lamp Connector
Z—Beacon Lamp Ground Lead
AA—Left Front Flood Lamp Connector
AB—Left Front Warning Lamp Connector

Continued on next page

RB14256,0004E67 –19–30SEP04–1/2

1. Disconnect battery negative (—) cable.

2. Remove cab roof outer shell and HVAC housing cover plate.

3. Remove right-side control console cover panel and center support molding. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)

4. Cut all tie straps.

5. Remove all hold-down clamps.

6. Disconnect wire connectors and leads (A—AB).

7. Replace electrical harness and connect all wire connectors and leads (A—AB).

8. Secure electrical harness using hold-down clamps and tie straps.

9. Install right-side control console cover panel and center support molding. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)

10. Install HVAC housing cover plate and cab roof outer shell.

11. Connect battery negative (—) cable.

RB14256,0004E67 –19–30SEP04–2/2

Section 50
Power Train Repair

Contents

Page

Group 05—Clutch Housing

Service Equipment and Tools 50-05-1
Other Material 50-05-2
Specifications 50-05-2
Separate Engine from Clutch Housing—Straddle Mount 50-05-3
Install Engine to Clutch Housing—Straddle Mount 50-05-7
Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors. 50-05-12
Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors . .50-05-21
Inspect and Repair Clutch Pedal and Linkage—Straddle Mount (POWRREVERSER™ Transmissions) 50-05-31
Inspect and Repair Clutch Pedal and Linkage—Isolated Open Operator Station and Cab Tractors (POWRREVERSER™ Transmissions) 50-05-32
Inspect and Repair Clutch Pedal and Linkage—Straddle Mount (SYNCSHUTTLE™ Transmissions) 50-05-33
Inspect and Repair Clutch Pedal and Linkage—Isolated Open Operator Station and Cab Tractors (SYNCSHUTTLE™ Transmissions) 50-05-35

Group 10—Clutch Assembly—SYNCSHUTTLE Transmissions

Essential Tools 50-10-1
Service Equipment and Tools 50-10-1
Other Material 50-10-2
Specifications 50-10-3
Remove and Install Clutch Assembly 50-10-4
Disassemble and Inspect Clutch Assembly 50-10-7
Assemble Clutch Assembly. 50-10-14
Traction Clutch Finger Adjustment 50-10-19
PTO Clutch Finger Adjustment 50-10-20
Remove and Inspect Clutch Release Mechanism and Shafts 50-10-21
Install Clutch Release Mechanism and Shafts 50-10-25

Group 11—Clutch Assembly—POWRREVERSER Transmission

Essential Tools 50-11-1
Service Equipment and Tools 50-11-1
Other Material 50-11-2
Specifications 50-11-2
Service Parts Kits 50-11-2
Remove and Install Clutch Assembly 50-11-3
Disassemble and Inspect Clutch Assembly 50-11-4
Assemble Clutch Assembly. 50-11-6
PTO Clutch Finger Adjustment 50-11-8
Remove and Inspect Clutch Release Mechanism and Shafts 50-11-9
Install Clutch Release Mechanism and Shafts 50-11-12
Remove, Inspect, and Repair Transmission Pump. 50-11-15

Group 12—POWRREVERSER

Essential Tools 50-12-1
Service Equipment and Tools 50-12-1
Other Material 50-12-2
Specifications 50-12-3
Remove and Install POWRREVERSER™ Control Valve. 50-12-5
Disassemble, Inspect, and Repair POWRREVERSER™ Control Valve 50-12-8
Remove and Install EH Hi/Lo Valve 50-12-10
Disassemble, Inspect, and Repair EH Hi/Lo Valve 50-12-12
Remove and Install POWRREVERSER™—Transmissions Without EH Hi/Lo. 50-12-14
Remove and Install POWRREVERSER™—Transmissions With EH Hi/Lo 50-12-20
Disassemble, Inspect, and Repair Reverse Idle Gear—Transmissions Without EH Hi/Lo 50-12-28
Disassemble, Inspect, and Repair Reverse Idle Gear—Transmissions With EH Hi/Lo 50-12-29
Disassemble, Inspect, and Repair Clutch Gear—Transmissions Without EH Hi/Lo . . .50-12-30
Disassemble, Inspect, and Repair Connect Shaft—Transmissions With EH Hi/Lo 50-12-31

Continued on next page

Page

Disassemble, Inspect, and Repair Driven Shaft—Transmissions Without EH Hi/Lo . . .50-12-32
Disassemble, Inspect, and Repair Driven Shaft—Transmissions With EH Hi/Lo. 50-12-33
Disassemble, Inspect, and Repair Hi/Lo Clutch Shaft—Transmissions With EH Hi/Lo 50-12-34
Disassemble, Inspect, and Repair POWRREVERSER™—Transmissions Without EH Hi/Lo. .50-12-39
Disassemble, Inspect, and Repair POWRREVERSER™—Transmissions With EH Hi/Lo 50-12-44

Group 15—SYNCSHUTTLE Transmission

Essential Tools 50-15-1
Service Equipment and Tools 50-15-1
Other Material 50-15-2
Specifications 50-15-2
Separate Clutch Housing from Transmission—Straddle Mount 50-15-3
Install Clutch Housing to Transmission—Straddle Mount 50-15-9
Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors. 50-15-14
Install Clutch Housing to Transmission—Isolated Open Operator Station and Cab Tractors. 50-15-16
Inspect and Repair Gear and Range Shift Levers 50-15-20
Remove Transmission. 50-15-22
Disassemble and Inspect Transmission. 50-15-26
Assemble Transmission 50-15-31
Install Transmission. 50-15-35
Disassemble, Inspect and Assemble Gearshift Shaft Assemblies 50-15-43
Disassemble, Inspect, and Assemble Transmission Top Shaft—SYNCSHUTTLE™ Transmission 50-15-45
Disassemble, Inspect, and Assemble Range Reduction Shaft 50-15-48
Disassemble, Inspect and Assemble Driven Shaft. 50-15-49
Remove, Inspect, and Install MFWD and Range Gears 50-15-51
Remove, Inspect, and Install Reverse Idler Shaft 50-15-52
Replace Clutch Housing Seal 50-15-54

Group 16—POWRREVERSER Transmission

Essential Tools 50-16-1
Service Equipment and Tools 50-16-1
Other Material 50-16-2
Specifications 50-16-2
Separate Clutch Housing from Transmission. . .50-16-3
Install Clutch Housing to Transmission 50-16-3
Remove Transmission. 50-16-4
Disassemble and Inspect Transmission. 50-16-10
Assemble Transmission 50-16-15
Install Transmission. 50-16-22
Disassemble, Inspect, and Assemble Gearshift Shaft Assemblies 50-16-30
Disassemble, Inspect, and Assemble Transmission Bottom Shaft 50-16-32
Disassemble, Inspect, and Assemble Range Reduction Shaft. .50-16-36
Disassemble, Inspect, and Assemble Top Shaft 50-16-37
Remove, Inspect, and Install MFWD and Range Gears 50-16-39

Group 20—Rear PTO Drive Shaft

Service Equipment and Tools 50-20-1
Other Material 50-20-1
Specifications 50-20-2
Remove, Inspect and Install Rear PTO Lever and Linkage—Straddle Mount 50-20-3
Remove, Inspect and Install Rear PTO Lever and Linkage—Isolated Open Operator Station and Cab Tractors. 50-20-5
Inspect and Repair PTO 540/540E Shift Lever and Linkage—Straddle Mount 50-20-7
Inspect and Repair PTO 540/540E Shift Lever and Linkage—Isolated Open Operator Station and Cab Tractors 50-20-9
Remove and Install Standard and 540/540E Rear PTO Drive Shaft Assembly. 50-20-11
Disassemble, Inspect and Assemble Standard Rear PTO Drive Shaft Assembly. 50-20-12
Disassemble, Inspect, and Assemble Rear 540/540E PTO Drive Shaft Assembly 50-20-16
Disassemble, Inspect, and Assemble Rear 540/1000 Standard PTO Drive Shaft Assembly. 50-20-18
Remove and Install 540/540E Electro-Hydraulic Rear PTO Shaft Assembly. 50-20-20
Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic and 540/1000 Electro-Hydraulic Pinion Shaft . . .50-20-22

Continued on next page

Page

Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic PTO Output Shaft Assembly 50-20-24
Disassemble, Inspect, and Assemble Rear 540/1000 Electro-Hydraulic PTO Output Shaft Assembly 50-20-26
Remove, Inspect and Install Electro-Hydraulic PTO Valve 50-20-28

Group 25—Differential

Essential Tools 50-25-1
Service Equipment and Tools 50-25-1
Other Material 50-25-2
Specifications 50-25-2
Service Parts Kits 50-25-3
Remove and Install Differential Assembly 50-25-4
Disassemble, Inspect, and Assemble Differential Assembly 50-25-6
Remove and Inspect Differential Drive Shaft . . .50-25-7
Install Differential Drive Shaft 50-25-9
Remove, Inspect, and Install Differential Lock Assembly 50-25-12
Differential Cone Point Adjustment 50-25-14
Differential Backlash Adjustment 50-25-15

Group 30—Final Drives

Service Equipment and Tools 50-30-1
Other Material 50-30-1
Specifications 50-30-2
Remove and Install Final Drive Assembly 50-30-3
Remove and Inspect Planetary Drive Assembly 50-30-5
Install Planetary Drive Assembly 50-30-6
Remove, Inspect, and Install Axle Shaft Assembly 50-30-9

Group 31—Hi-Crop Final Drives

Other Material 50-31-1
Specifications 50-31-1
Remove and Install Hi-Crop Axle Assembly . . .50-31-2
Remove, Inspect and Install Hi-Crop Final Drive Assembly 50-31-6

Group 35—Mechanical Front Wheel Drive

Service Equipment and Tools 50-35-1
Other Material 50-35-1
Specifications 50-35-2
MFWD Axle Repair—Use CTM4870 50-35-2
Remove and Install MFWD Drop Gearbox 50-35-3
Disassemble and Inspect MFWD Drop Gearbox. 50-35-4
MFWD Drop Gearbox Cross Section. 50-35-10
Assemble MFWD Drop Gearbox 50-35-11

Page

Remove, Inspect and Install MFWD Drive Shaft 50-35-16
Remove and Install MFWD Axle Housing Assembly 50-35-17

Group 40—Creeper Assembly

Other Material 50-40-1
Specifications 50-40-1
Remove and Install Creeper Assembly 50-40-2
Disassemble, Inspect, and Assemble Creeper Assembly 50-40-4

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,0000321 –19–08NOV04–1/4

Lifting Brackets JDG19

Used to remove and install engine.

Lifting Brackets JT01748

Used to remove and install engine.

OUO1082,0000321 –19–08NOV04–2/4

Flywheel Turning Tool JDE83

Used to rotate flywheel (4-cylinder)

Flywheel Turning Tool JDG1704

Used to rotate flywheel (5-cylinder)

OUO1082,0000321 –19–08NOV04–3/4

Bushing, Bearing, and Seal Driver Set

Used to install bushings in clutch pedal.

OUO1082,0000321 –19–08NOV04–4/4

Other Material

Number	Name	Use
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to splined ends of traction and PTO clutch shafts. Apply to ID of clucth pedal bushings.

OUO1082,0000322 –19–08NOV04–1/1

Specifications

Item	Measurement	Specification
Clutch Housing-to-Engine M20 Cap Screw	Torque	430 N•m (317 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw	Torque	260 N•m (192 lb-ft)

OUO1082,0000323 –19–08NOV04–1/1

Separate Engine from Clutch Housing—Straddle Mount

1. Block front and back of rear tires.

2. Remove MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

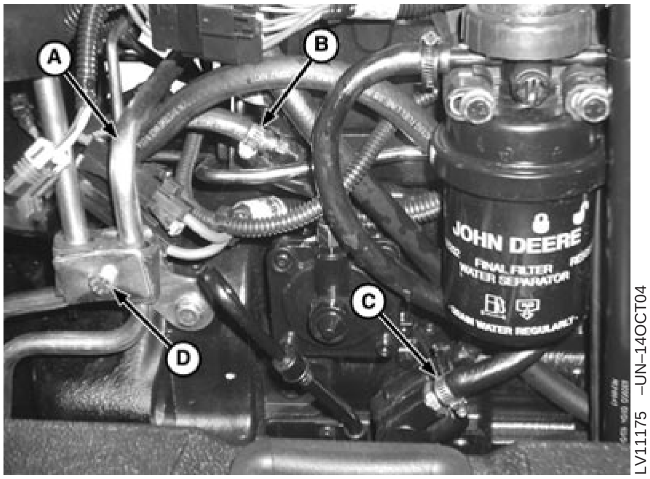
3. Remove hood and disconnect negative (—) battery cable from battery.

NOTE: Close all openings using caps and plugs.

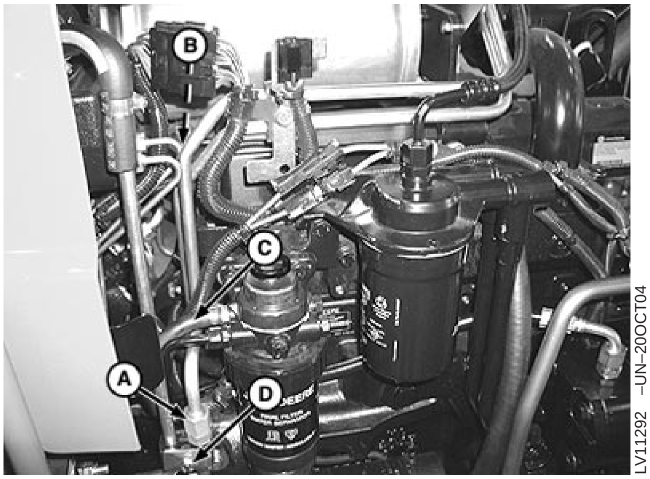
4. Disconnect hydraulic line (A) and clamp (D).

5. Disconnect fuel lines (B and C). Route fuel lines towards rear of tractor.

A—Hydraulic Line
B—Return Fuel Line
C—Supply Fuel Line
D—Clamp


A
B
C
D
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV11175 –UN–14OCT04

5-Cylinder Engine Fuel/Hydraulic Lines (Without Oil Cooler)

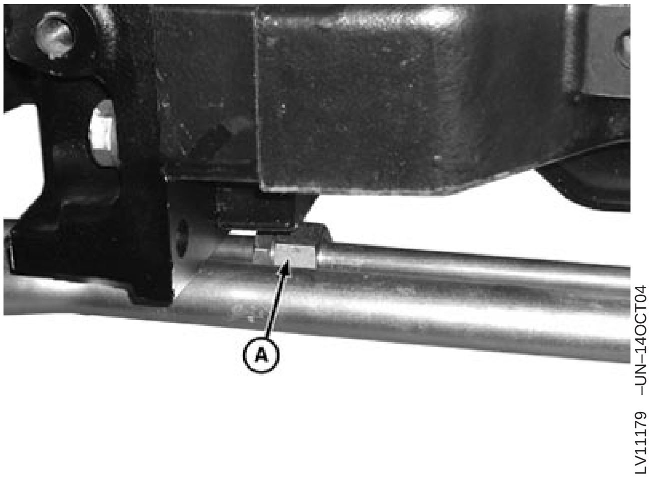

B
C
A
D
LV11292 –UN–20OCT04

4-Cylinder Engine Fuel/Hydraulic Lines (With Oil Cooler)

JG31785,00000F4 –19–15OCT04–1/7

6. Disconnect hydraulic line (A).

A—Hydraulic Line


A
LV11179 –UN–14OCT04

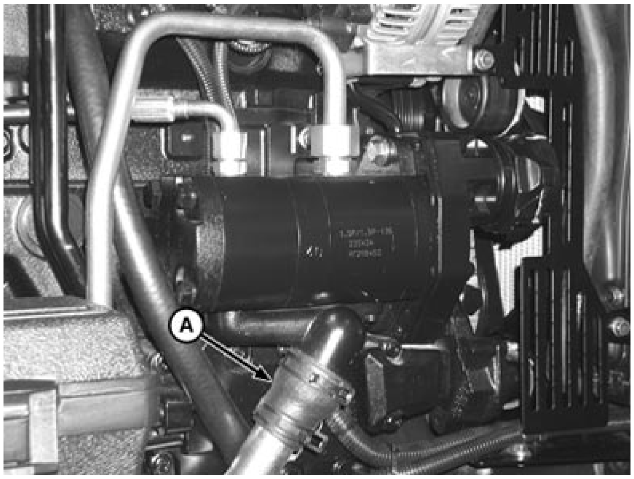
Continued on next page

JG31785,00000F4 –19–15OCT04–2/7

NOTE: Support hydraulic pump suction line (A). Transmission/hydraulic oil will spill out of transmission filter assembly if line drops below transmission/reservoir oil level.

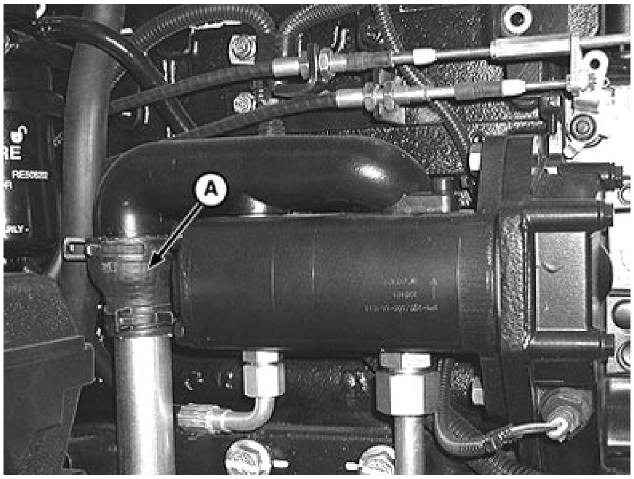
7. Disconnect hydraulic suction line (A).

A—Hydraulic Suction Line



LV11178 –UN–14OCT04

4-Cylinder Engine



LV11293 –UN–20OCT04

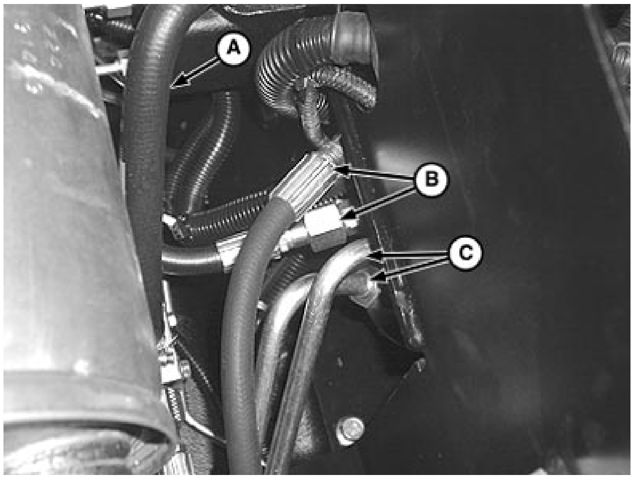
5-Cylinder Engine

JG31785,00000F4 –19–15OCT04–3/7

8. Disconnect brake valve supply hose (A).

9. Disconnect steering valve hoses (B) and lines (C).

A—Brake Valve Supply Hose
B—Steering Valve Hose (2 used)
C—Steering Valve Line (2 used)



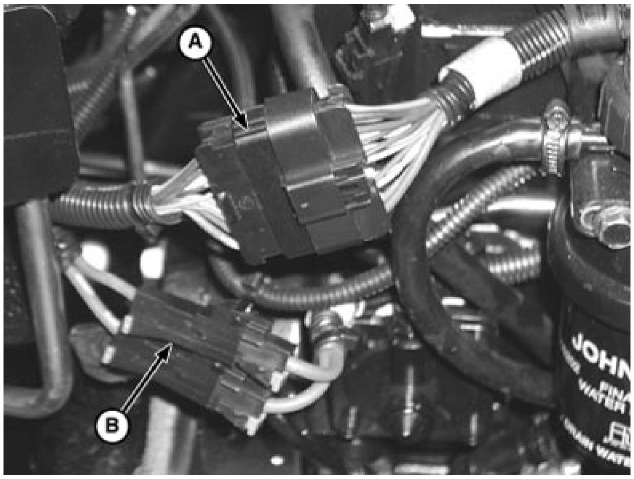
LV11291 –UN–20OCT04

Continued on next page

JG31785,00000F4 –19–15OCT04–4/7

10. Disconnect main harness connectors (A and B).

A—16-Pin Connector
B—Power Connector (2 used)



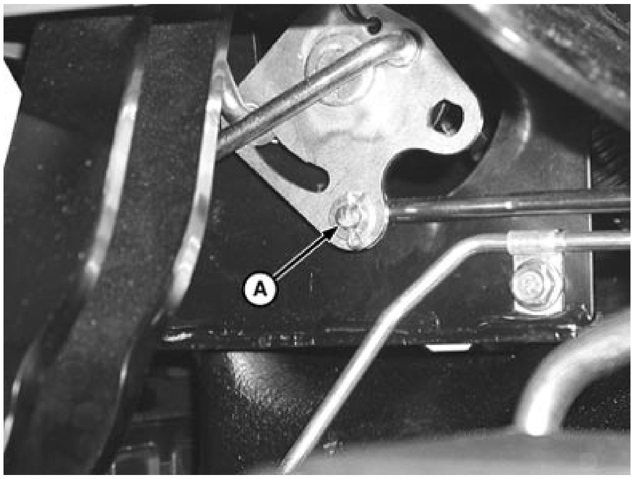
LV11177 –UN–14OCT04

JG31785,00000F4 –19–15OCT04–5/7

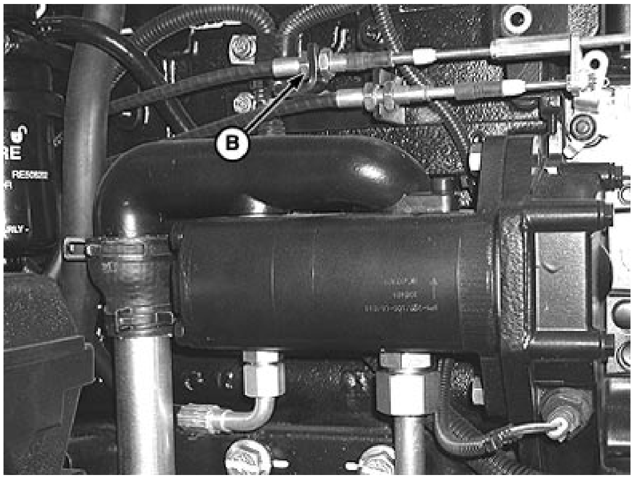
NOTE: 5-cylinder engine throttle linkage shown; 4-cylinder linkage is similar. 5-cylinder 540/540E shiftable PTO cable shown; 4-cylinder is similar.

11. Disconnect throttle linkage rod (A). If equipped with 540/540E shiftable PTO, disconnect throttle cable (B), loosen only the front nut.

A—Throttle Linkage Rod
B—540/540E Shiftable PTO Throttle Cable



LV11180 –UN–14OCT04



LV11294 –UN–20OCT04

Continued on next page

JG31785,00000F4 –19–15OCT04–6/7

CAUTION: If tractor is equipped with optional front weights and support, remove weights and support before removing any engine-to-clutch housing mounting hardware.

12. Remove front weights and support, if equipped.

13. Install lifting brackets such as JDG19 or JT01748.

14. Attach a hoist to engine.

15. Install a floor jack under clutch housing.

16. Install wood blocks between front axle pivot stops and frame.

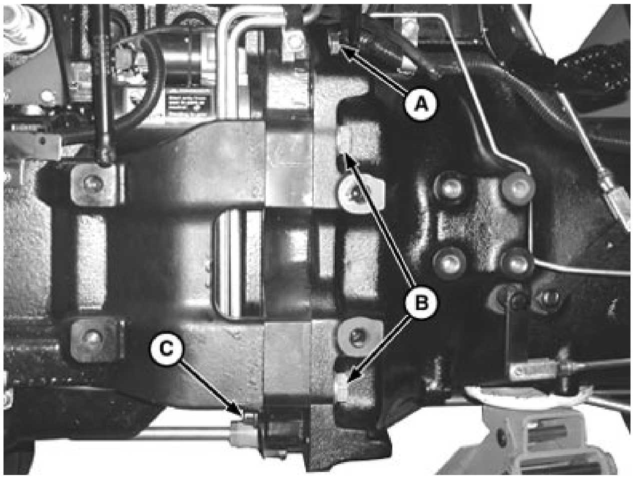
NOTE: 5-cylinder engine shown; 4-cylinder is similar.

IMPORTANT: Make sure tractor is level before removing engine to prevent damage to PTO shaft.

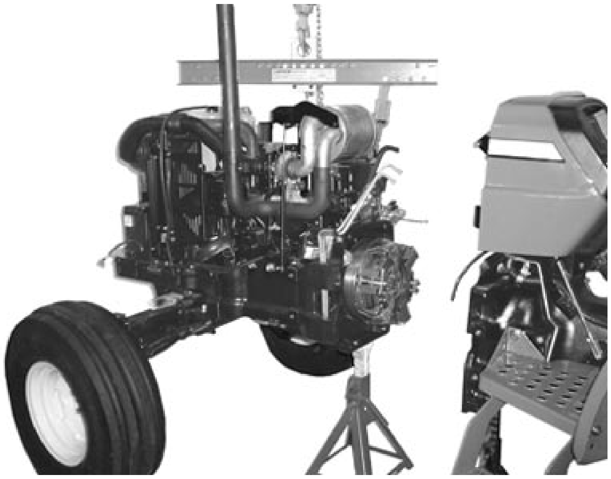
17. Remove cap screws (A—C). Repeat this procedure for opposite side of tractor.

18. Roll front section (engine/front axle assembly) away from tractor rear section.

19. Install a support stand under the flywheel housing of engine.



LV11260 –UN–14OCT04



LV11181 –UN–14OCT04

A—Cap Screw (2 used)
B—Cap Screw (4 used)
C—Cap Screw (2 used)

JG31785,00000F4 –19–15OCT04–7/7

Install Engine to Clutch Housing—Straddle Mount

1. Clean mating surfaces of clutch housing and engine.

NOTE: It may be necessary to rotate the PTO shaft and/or engine flywheel so the clutch shafts mesh with the clutch disks. Rotate the PTO shaft by manually turning the PTO at rear of tractor. Rotate the engine flywheel using Flywheel Turning Tool JDE83 (4-cylinder) or JDG1704 (5-cylinder).

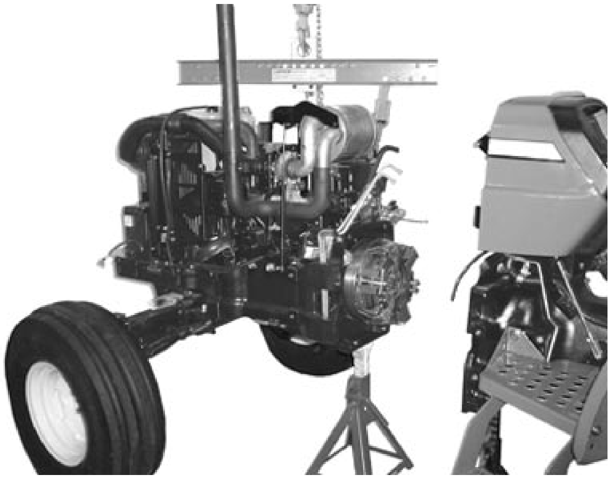
2. Apply Moly High Temperature EP Grease to splined ends of traction and PTO clutch shafts.

Continued on next page

IMPORTANT: Make sure tractor is level before installation of engine to prevent damage to PTO shaft.

Do not draw engine against clutch housing using cap screws, or damage will result. Make sure engine and clutch housing mating surfaces are completely together before tightening cap screws.

NOTE: 5-cylinder engine shown; 4-cylinder is similar.


LV11181 –UN–14OCT04

3. Install engine to clutch housing.

4. Install cap screws (A—C).

   Tighten cap screws to specification.

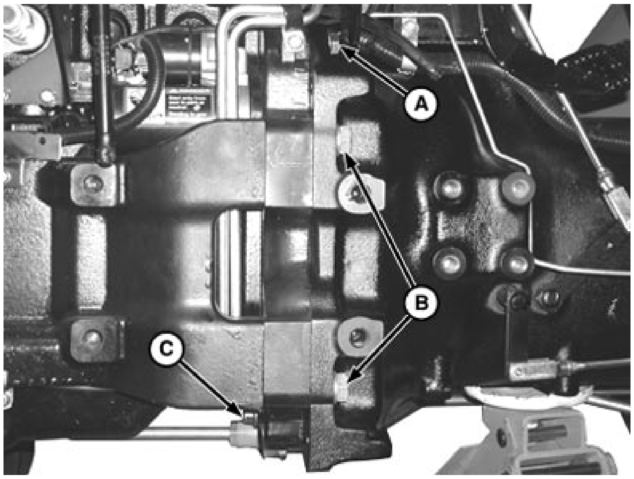
Specification

Clutch Housing-to-Engine M20 Cap Screw—Torque	430 N•m (317 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw—Torque	260 N•m (192 lb-ft)

5. Remove wood blocks and floor jack.

6. Remove lifting brackets.

7. Install front weights and support, if equipped.



LV11260 –UN–14OCT04

A—Cap Screw (2 used)
B—M20 Cap Screw (4 used)
C—Cap Screw (2 used)

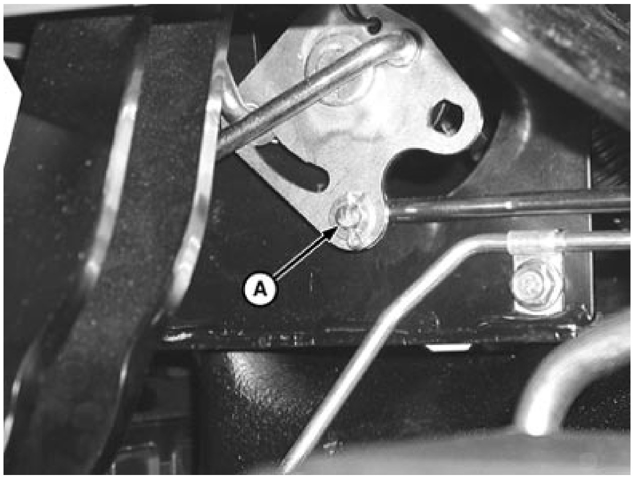
Continued on next page

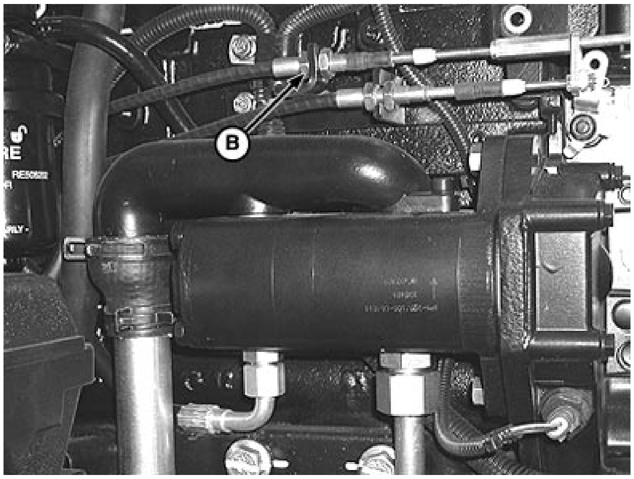
JG31785,00000F2 –19–15OCT04–2/8

NOTE: 5-cylinder engine throttle linkage shown; 4-cylinder linkage is similar. 5-cylinder 540/540E shiftable PTO cable shown; 4-cylinder is similar.

8. Connect throttle linkage (A). If equipped with 540/540E shiftable PTO, connect throttle cable (B).

A—Throttle Linkage
B—540/540E Shiftable PTO Throttle Cable

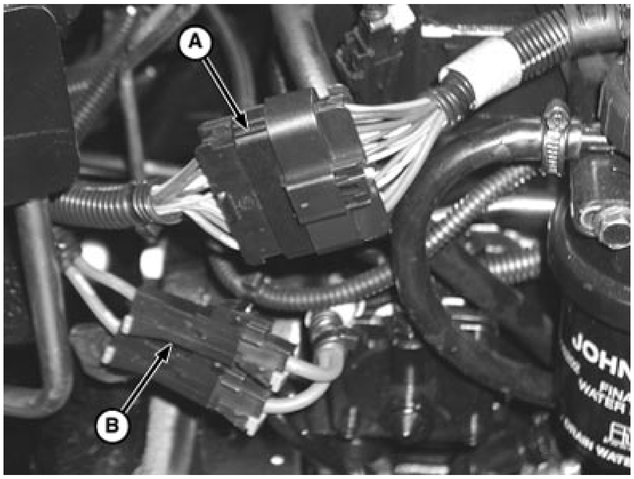

A
LV11180 –UN–14OCT04


B
LV11294 –UN–20OCT04

JG31785,00000F2 –19–15OCT04–3/8

9. Connect main harness connectors (A and B).

A—16-Pin Connector
B—Power Connector (2 used)


A
B
LV11177 –UN–14OCT04

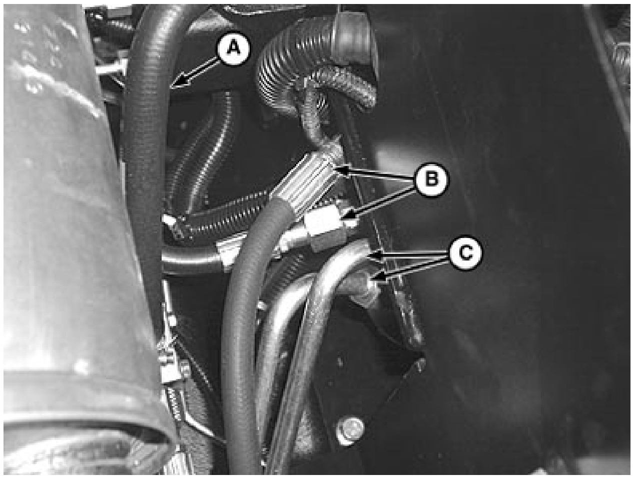
Continued on next page

JG31785,00000F2 –19–15OCT04–4/8

10. Connect brake valve supply hose (A).

11. Connect steering valve hoses (B) and lines (C).

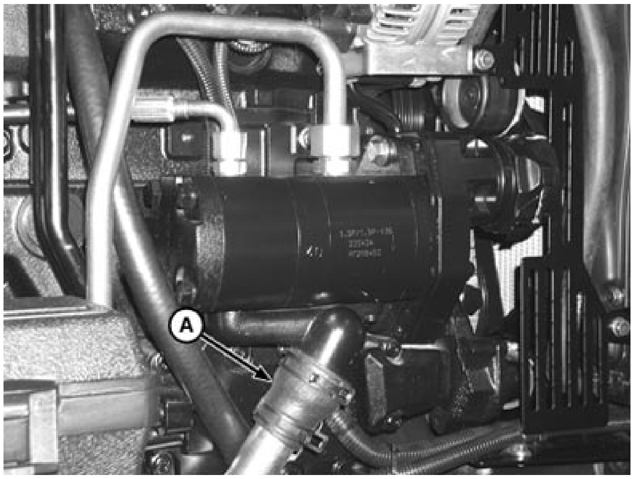
A—Brake Valve Supply Hose
B—Steering Valve Hose (2 used)
C—Steering Valve Line (2 used)


A
B
C
LV11291 –UN–20OCT04

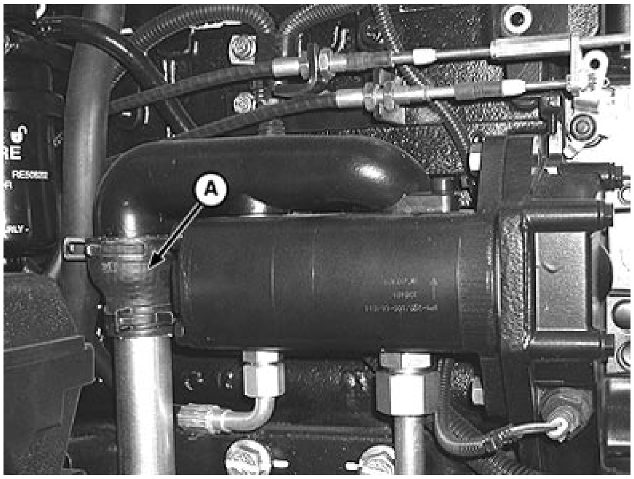
JG31785,00000F2 –19–15OCT04–5/8

12. Connect hydraulic suction line (A).

A—Hydraulic Suction Line


A
LV11178 –UN–14OCT04

4-Cylinder Suction Line


A
LV11293 –UN–20OCT04

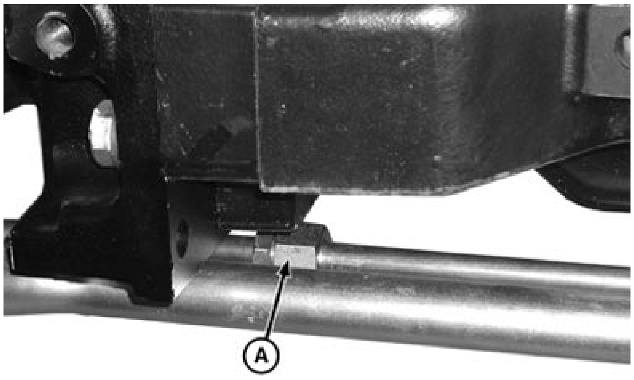
5-Cylinder Suction Line

Continued on next page

JG31785,00000F2 –19–15OCT04–6/8

13. Connect hydraulic line (A).

A—Hydraulic Line


A
LV11179 –UN–14OCT04

JG31785,00000F2 –19–15OCT04–7/8

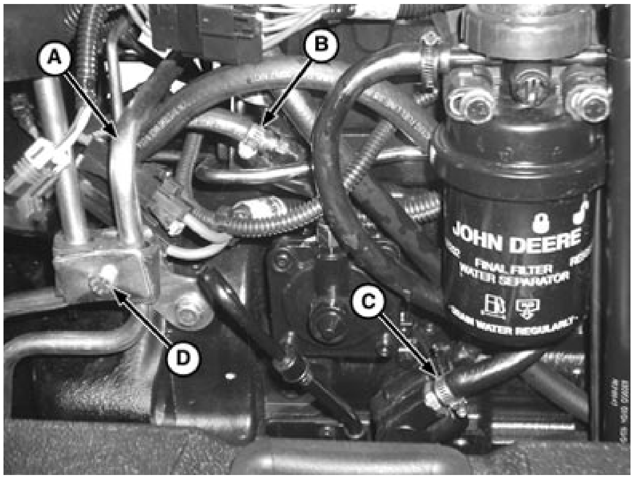
14. Route fuel lines towards front of tractor. Connect fuel lines (B and C).

15. Connect hydraulic line (A) and clamp (D).

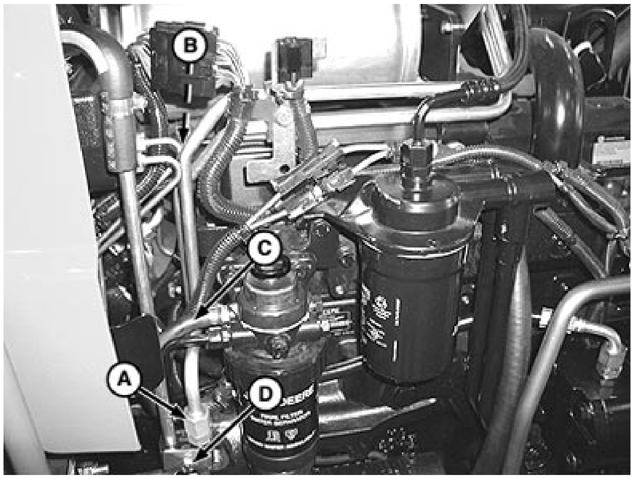
16. Install MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

17. Install hood and connect negative (—) cable to battery.

A—Hydraulic Line
B—Return Fuel Line
C—Supply Fuel Line
D—Clamp


A
B
C
D
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV11175 –UN–14OCT04

5-Cylinder Engine Fuel/Hydraulic Lines (Without Oil Cooler)


A
B
C
D
LV11292 –UN–20OCT04

4-Cylinder Engine Fuel/Hydraulic Lines (With Oil Cooler)

JG31785,00000F2 –19–15OCT04–8/8

Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors

NOTE: Cab tractor shown. Isolated open operator station is similar.

1. Cab Tractors: Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

OUO6083,00080E9 –19–30SEP04–1/13

TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

2. Drain coolant from engine.

3. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)

4. Disconnect battery, negative (—) cable first.

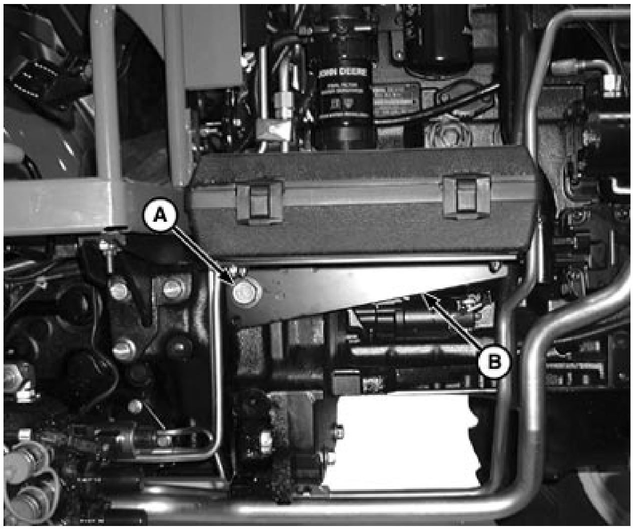
5. Remove MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

Continued on next page

OUO6083,00080E9 –19–30SEP04–2/13

6. Remove cap screw (A) and toolbox (B), if equipped.

A—Cap Screw
B—Toolbox



LV10916 –UN–06OCT04

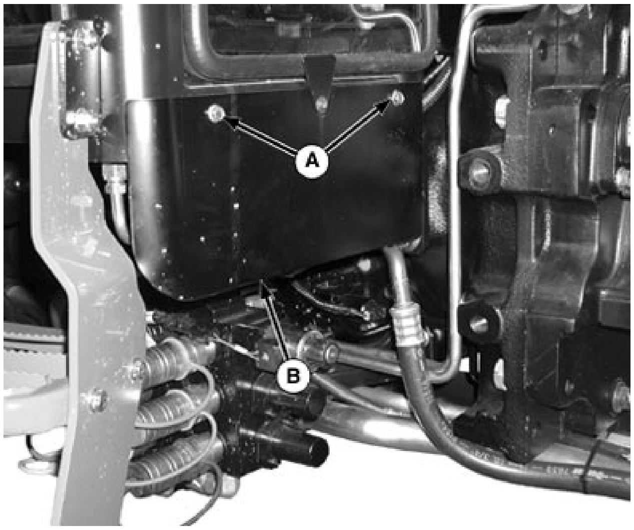
OUO6083,00080E9 –19–30SEP04–3/13

7. Cab Tractors: Remove cap screws (A) and right-hand side crop guard (B).

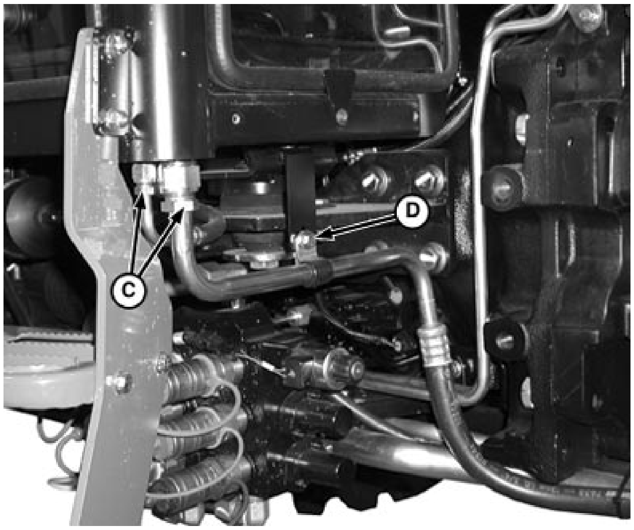
NOTE: Close all openings using caps and plugs.

8. Cab Tractors: Disconnect air conditioning lines (C) and remove clamp (D). Move A/C lines away from tractor body, toward engine. Close all openings using caps and plugs.

A—Cap Screw (2 used)
B—Right-Hand Side Crop Guard
C—Air Conditioning Line (2 used)
D—Clamp



LV10897 –UN–06OCT04



LV10898 –UN–06OCT04

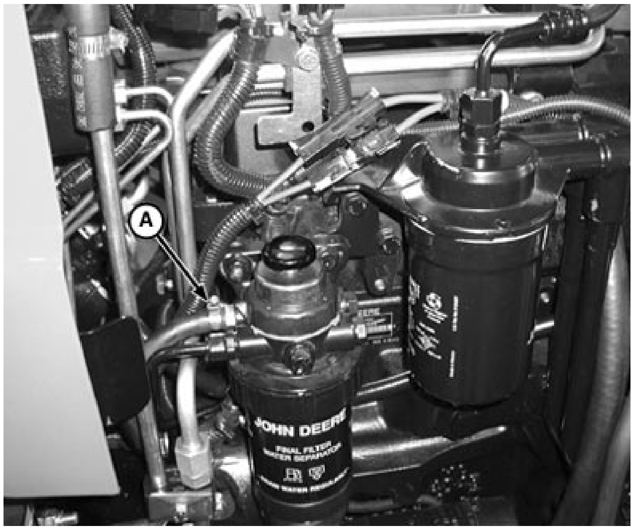
Continued on next page

OUO6083,00080E9 –19–30SEP04–4/13

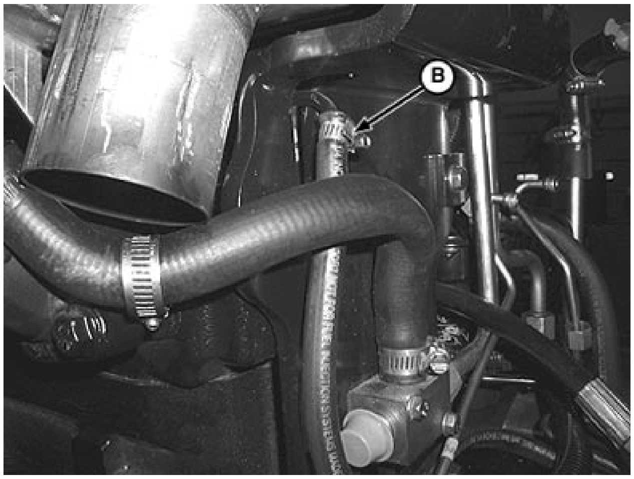
NOTE: Close all openings using caps and plugs to prevent contamination.

9. Disconnect fuel supply and return hoses (A and B). Close all openings using caps and plugs.

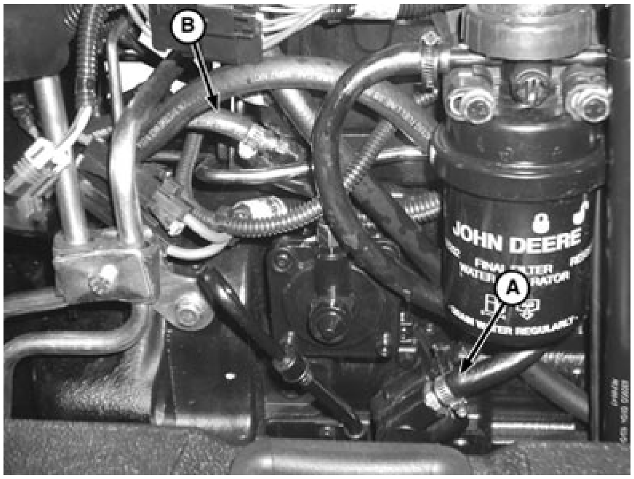
A—Fuel Supply Hose
B—Fuel Return Hose


A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV10899 –UN–06OCT04

4-Cylinder Supply Hose


B
LV11307 –UN–20OCT04

4-Cylinder Return Hose


B
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
A
LV11306 –UN–20OCT04

5-Cylinder Hoses

Continued on next page

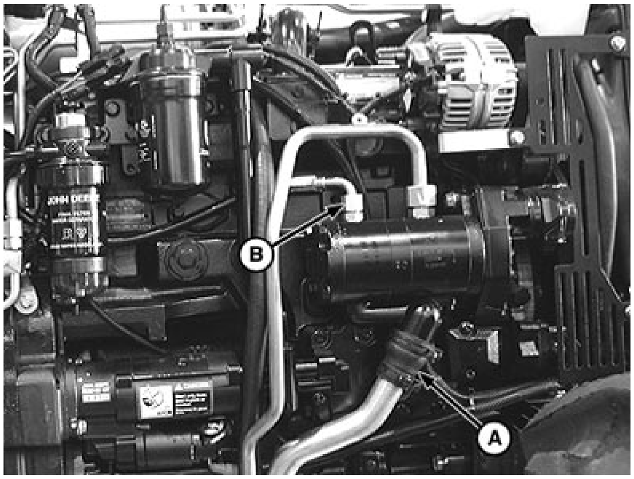
NOTE: Support hydraulic pump suction line (A). Transmission/hydraulic oil will spill out of transmission filter assembly if line drops below transmission/reservoir oil level.

10. Disconnect hydraulic pump suction line (A) from pump. Close all openings using caps and plugs.

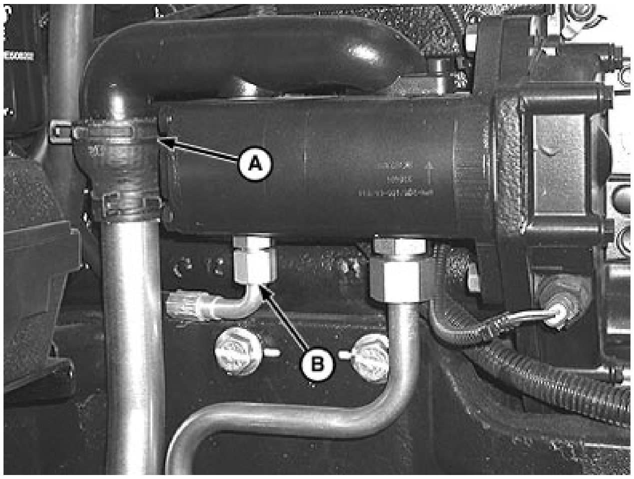
11. Disconnect hydraulic steering supply line (B). Close all openings using caps and plugs.

12. Disconnect main hydraulic supply line (C).

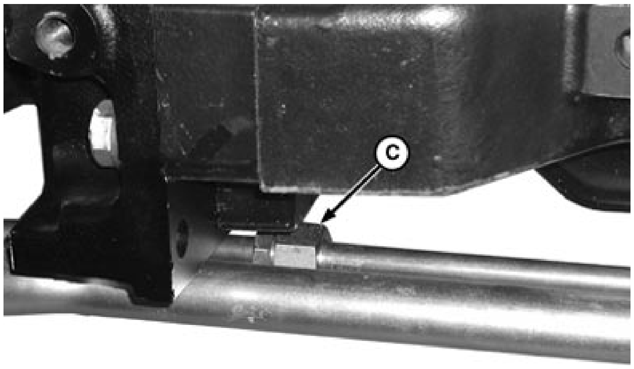
A—Hydraulic Pump Suction Line
B—Hydraulic Steering Supply Line
C—Main Hydraulic Supply Line



4-Cylinder



5-Cylinder



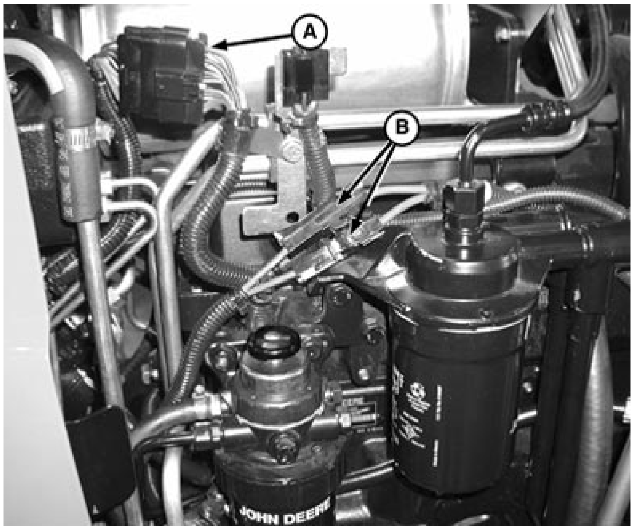
Continued on next page

OUO6083,00080E9 –19–30SEP04–6/13

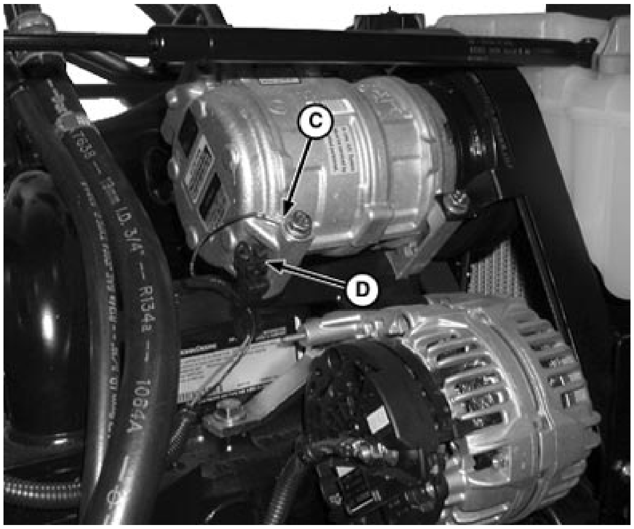
13. Disconnect wiring harness connectors (A and B).

14. Cab Tractors: Disconnect A/C compressor ground wire (C) and connector (D), if equipped.

A—Main Wiring Harness Connector
B—Wiring Harness Connectors (2 used)
C—Ground Wire
D—Connector



LV10901 –UN–06OCT04



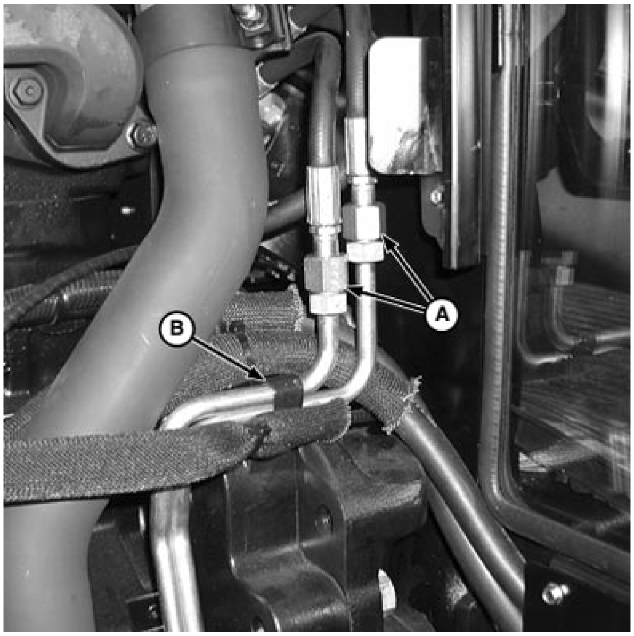
LV10902 –UN–06OCT04

Continued on next page

OUO6083,00080E9 –19–30SEP04–7/13

15. Remove two steering lines (A) and clamp (B). Close all openings using caps and plugs.

A—Steering Line (2 used)
B—Clamp



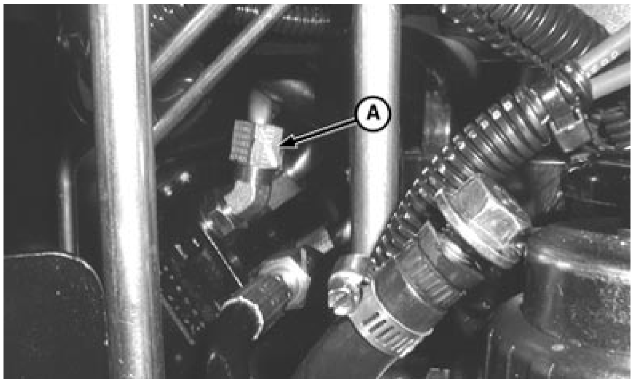
LV10904 –UN–06OCT04

OUO6083,00080E9 –19–30SEP04–8/13

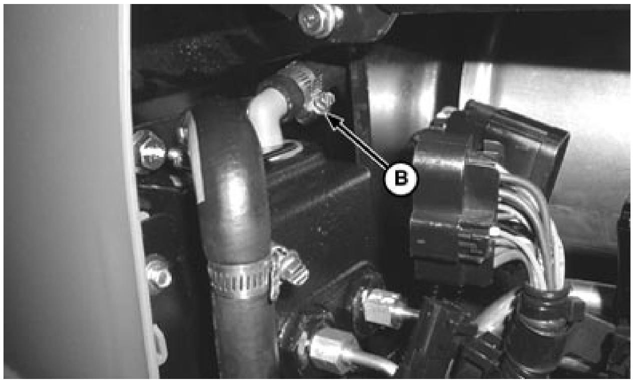
16. Remove steering hose (A) from steering valve.

17. Remove hydraulic hose (B) from brake valve.

A—Steering Hose
B—Hydraulic Hose



LV10903 –UN–07OCT04



LV10933 –UN–07OCT04

Continued on next page

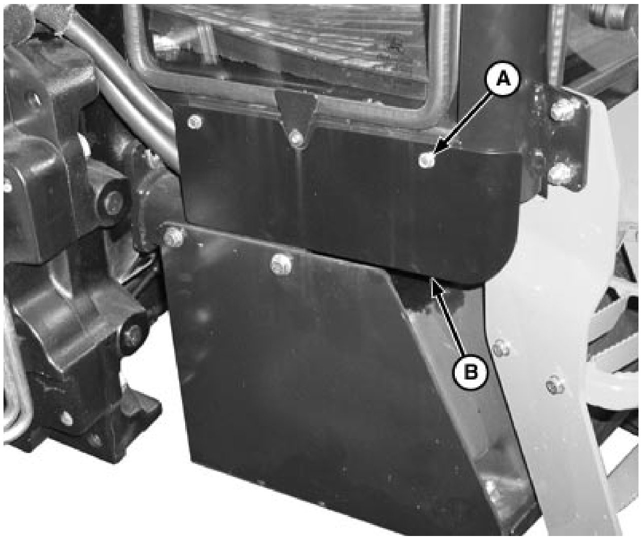
OUO6083,00080E9 –19–30SEP04–9/13

18. Cab Tractors: Remove cap screws (A) and left-hand side crop guard (B).

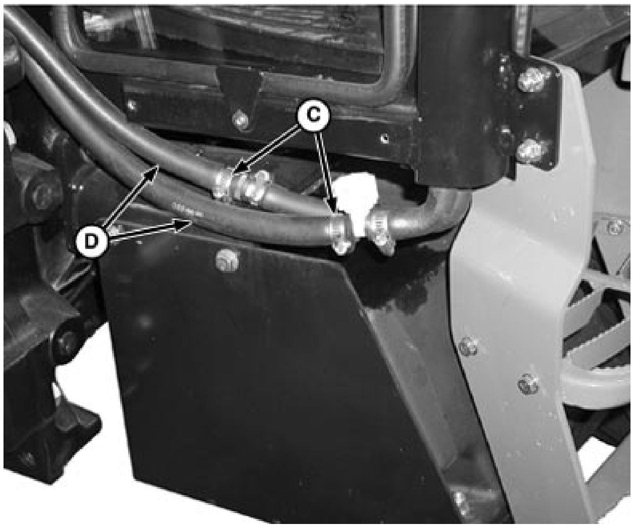
NOTE: Tag or label heater hoses before disconnecting to aid during installation.

19. Cab Tractors: Loosen hose clamps (C) and remove heater hoses (D).

A—Cap Screw (2 used)
B—Left-Hand Side Crop Guard
C—Hose Clamp (2 used)
D—Heater Hose (2 used)



LV10905 –UN–13OCT04



LV10906 –UN–06OCT04

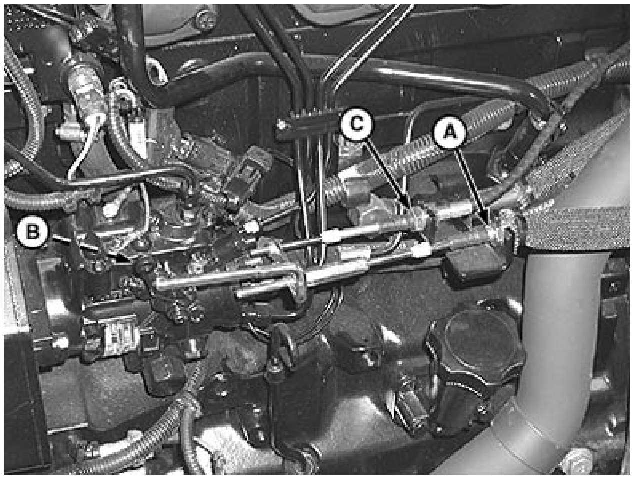
Continued on next page

OUO6083,00080E9 –19–30SEP04–10/13

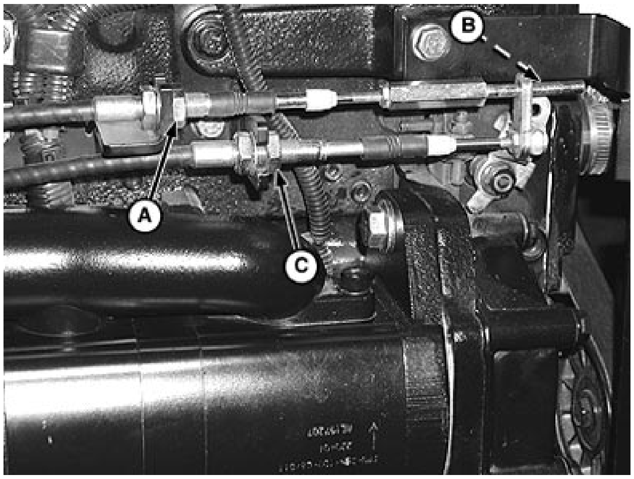
20. Loosen nut (C), remove cotter pin (B) and route throttle linkage away from engine.

    If equipped: Loosen nut (A) and route 540/540E linkage away from engine.

A—Nut—540/540E Cable
B—Cotter Pin
C—Nut—Throttle Cable


C
A
B
LV11356 –UN–20OCT04

4-Cylinder


B
A
C
LV11357 –UN–20OCT04

5-Cylinder

Continued on next page

OUO6083,00080E9 –19–30SEP04–11/13

21. Remove air intake hose, muffler and exhaust pipe if necessary to attach lifting brackets.

22. Install lifting brackets such as JDG19 or JT01748 to engine.

23. Attach proper lifting device to engine.

CAUTION: If tractor is equipped with optional front weights, remove weights and weight support before removing any engine to clutch housing mounting hardware.

24. Remove front weights and weight support, if equipped.

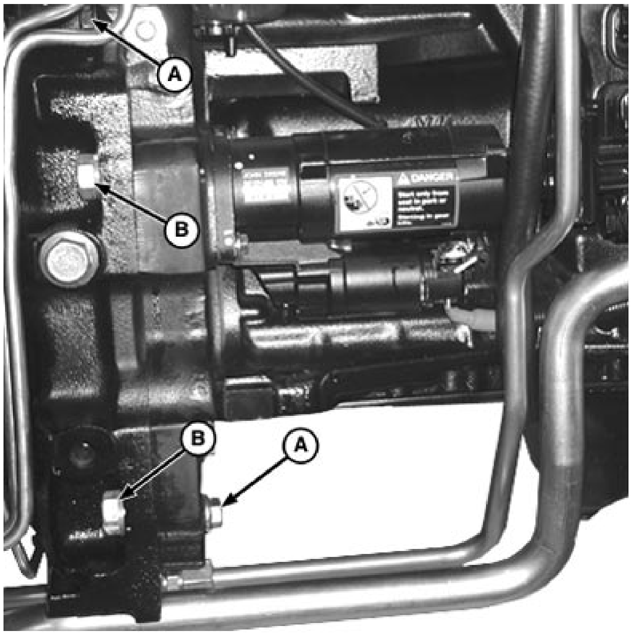
25. Install a floor jack under clutch housing.

26. Install wood blocks between front axle pivot stops and frame.

NOTE: 4-cylinder shown; 5-cylinder is similar.

Ensure disconnected hydraulic lines do not entangle with engine components or electrical wiring during engine/clutch housing separation.

27. Remove four flanged head cap screws (A) and four cap screws with washers (B). Roll front section (engine/front axle assembly) away from tractor rear section.

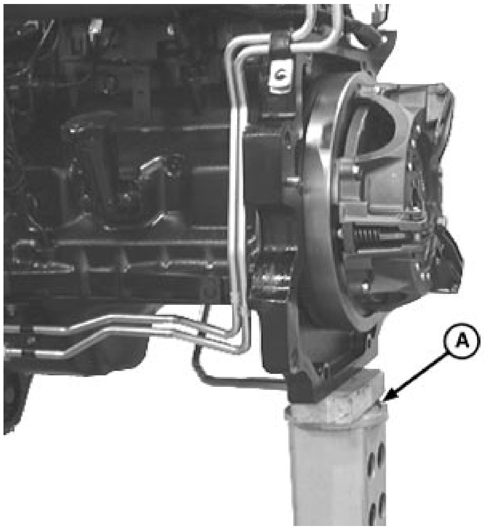


A—Flanged Head Cap Screw (4 used)
B—Cap Screw with Washers (4 used)

Continued on next page

28. Install a support stand (A) under flywheel housing of engine.

A—Support Stand



LV10910 –UN–06OCT04

OUO6083,00080E9 –19–30SEP04–13/13

Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors

1. Attach proper lifting device to engine, if removed. Remove support stand (A) from flywheel housing.

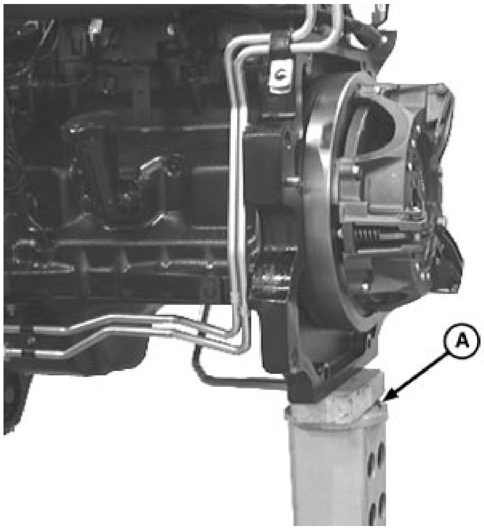
2. Clean mating surfaces of clutch housing and engine.

3. Put transmission shift levers in neutral to ease clutch shaft alignment with engine.

4. Apply Moly High Temperature EP Grease to traction and PTO clutch shafts.

NOTE: Turning PTO shaft at rear of tractor during engine installation will aid in alignment of PTO clutch and shaft.

5. Use flywheel turning tool JDE83 (4-cylinder) or JDG1704 (5-cylinder) to help align traction clutch and shaft.



LV10910 –UN–06OCT04

A—Support Stand

Continued on next page

OUO6083,00080EA –19–30SEP04–1/12

IMPORTANT: 4-cylinder shown; 5-cylinder is similar.

Make sure tractor is level before installation of engine to prevent damage to PTO shaft.

Do not draw engine against clutch housing using cap screws, or damage will result. Make sure engine and clutch housing mating surfaces are completely together before tightening cap screws.

6. Install engine to clutch housing.

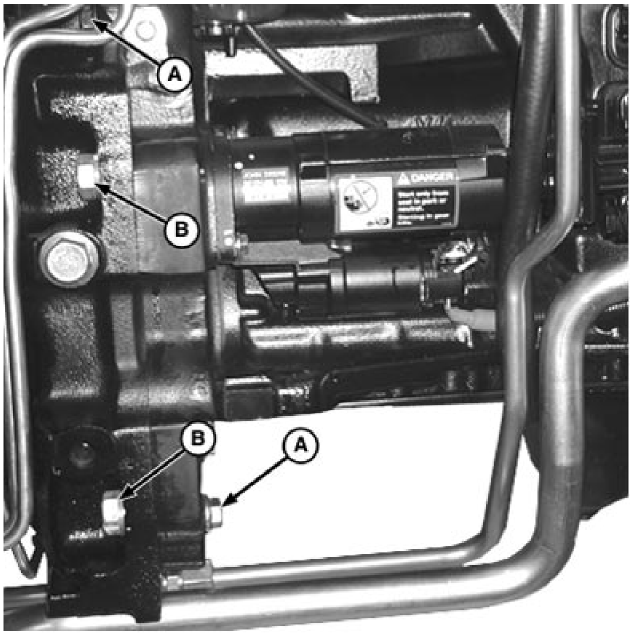
7. Install cap screws (A and B).

   Tighten cap screws to specification.

Specification	
Clutch Housing-to-Engine M20 Cap Screw—Torque	430 N•m (317 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw—Torque	260 N•m (192 lb-ft)

8. Install air intake hose, muffler and exhaust pipe, if removed.

9. Install front weight support and weights, if equipped.



LV10909 –UN–27OCT04

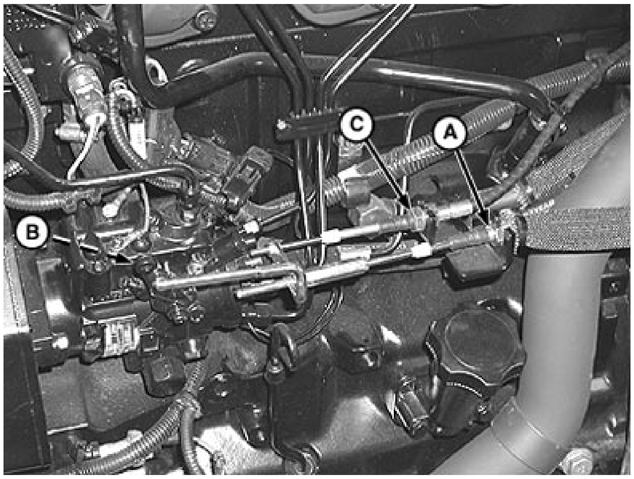
A—Flanged Head Cap Screw (4 used)
B—M20 Cap Screw with Washers (4 used)

Continued on next page

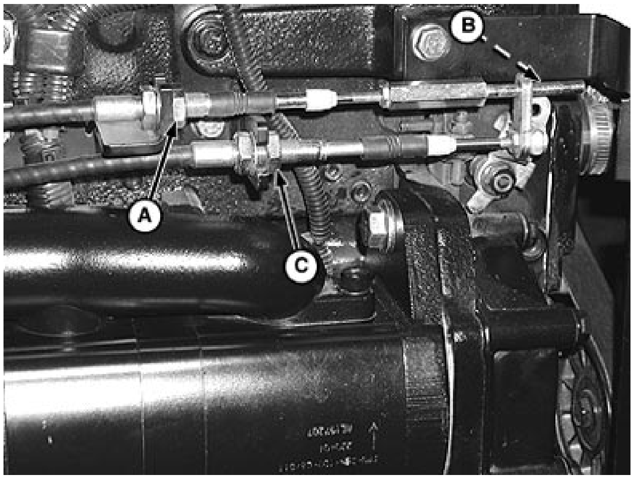
10. Install cotter pin (B) and tighten nut (C) to install throttle linkage.

    Install 540/540E linkage and tighten nut (A), if equipped.

A—Nut—540/540E Cable
B—Cotter Pin
C—Nut—Throttle Cable


C
A
B
LV11356 –UN–20OCT04

4-Cylinder


B
A
C
LV11357 –UN–20OCT04

5-Cylinder

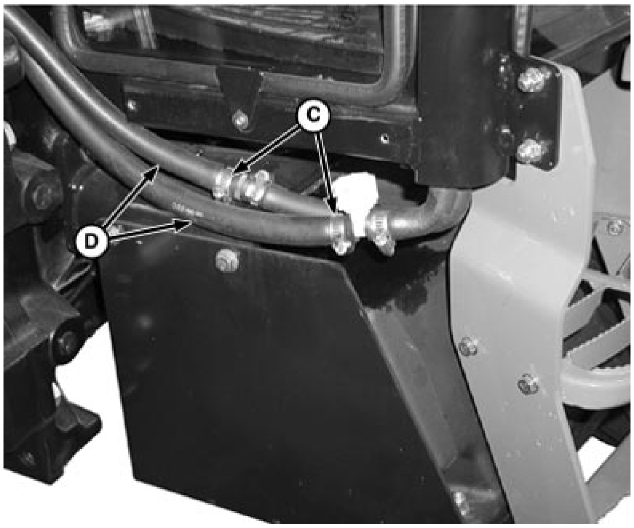
Continued on next page

OUO6083,00080EA –19–30SEP04–3/12

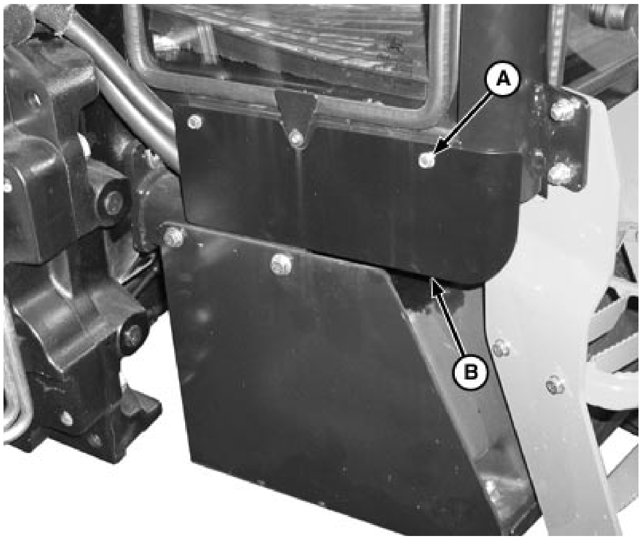
11. Cab Tractors: Connect heater hoses (D) and tighten hose clamps (C).

12. Cab Tractors: Install left-hand side crop guard (B) using cap screws (A).

A—Cap Screw (2 used)
B—Left-Hand Side Crop Guard
C—Hose Clamp (2 used)
D—Heater Hose (2 used)



LV10906 –UN–06OCT04



LV10905 –UN–13OCT04

Continued on next page

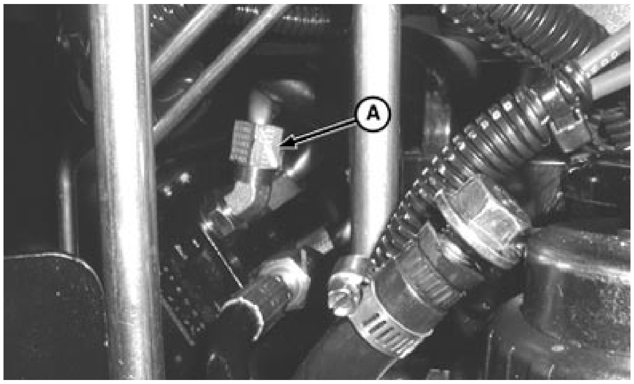
OUO6083,00080EA –19–30SEP04–4/12

NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

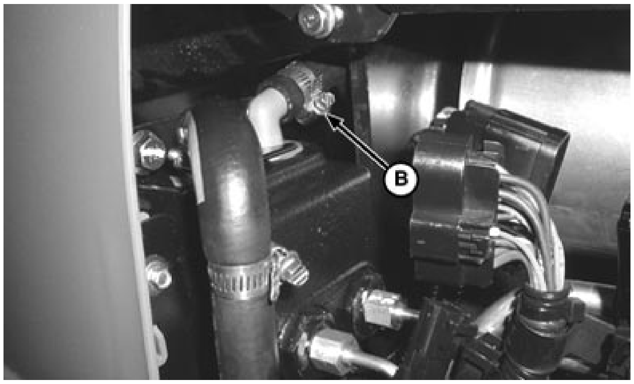
13. Connect hydraulic hose (B) to brake valve.

14. Connect steering hose (A) to steering valve.

A—Steering Hose
B—Hydraulic Hose



LV10903 –UN–07OCT04

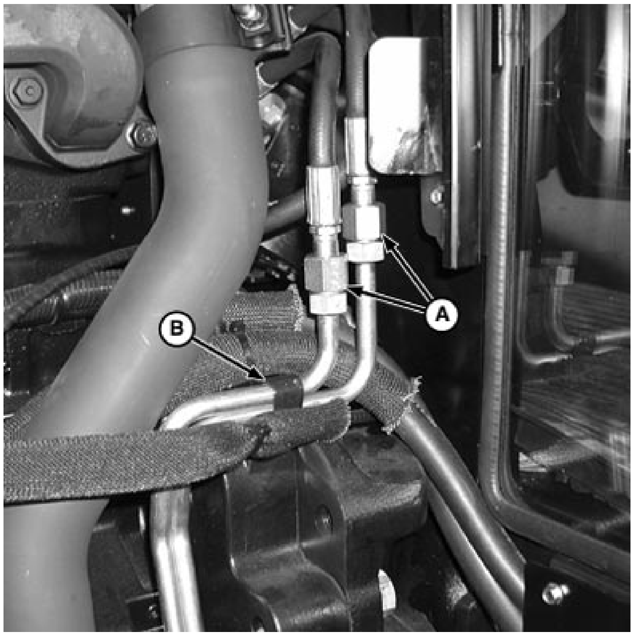


LV10933 –UN–07OCT04

OUO6083,00080EA –19–30SEP04–5/12

15. Connect two steering lines (A) and clamp (B). Replace all O-rings. Used or damaged O-rings and seals will leak.

A—Steering Line (2 used)
B—Clamp



LV10904 –UN–06OCT04

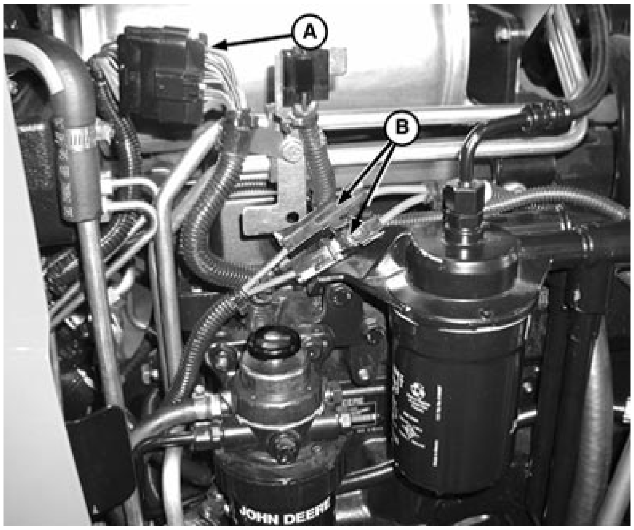
Continued on next page

OUO6083,00080EA –19–30SEP04–6/12

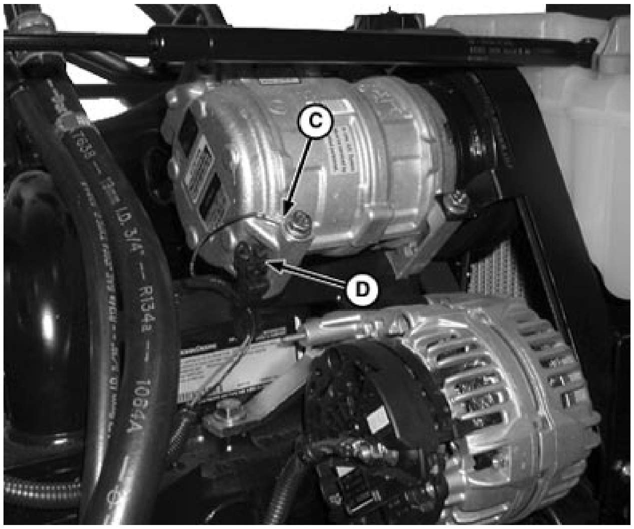
16. Connect wire harness connectors (A and B).

17. Connect A/C compressor ground wire (C) and connector (D), if equipped.

A—Main Wire Harness Connector
B—Wire Harness Connectors (2 used)
C—Ground Wire
D—Connector



LV10901 –UN–06OCT04



LV10902 –UN–06OCT04

Continued on next page

OUO6083,00080EA –19–30SEP04–7/12

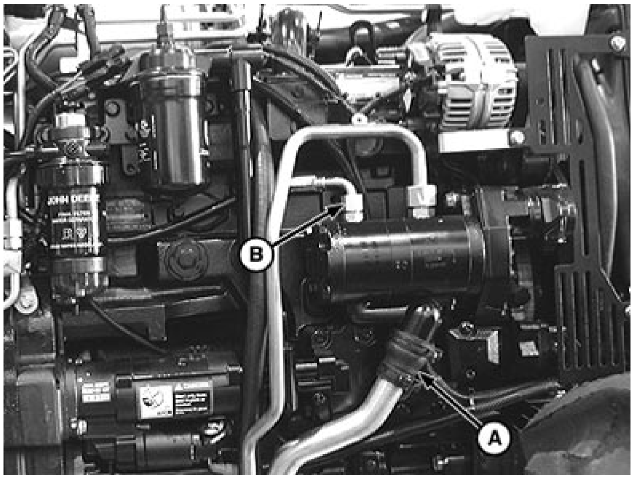
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

18. Connect hydraulic pump suction line (A) to pump.

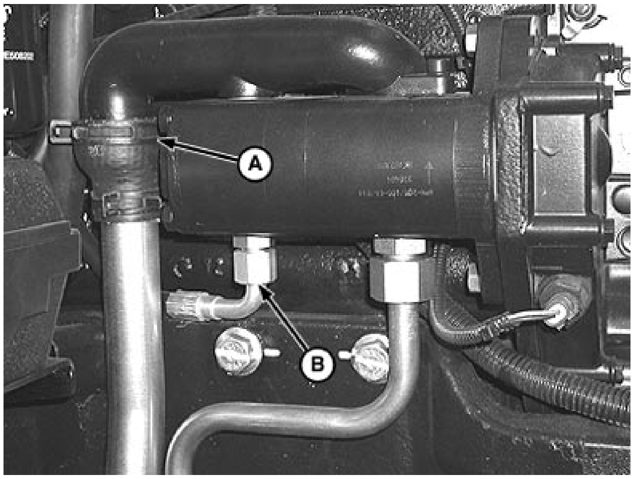
19. Connect hydraulic steering supply line (B).

20. Connect main hydraulic supply line (C).

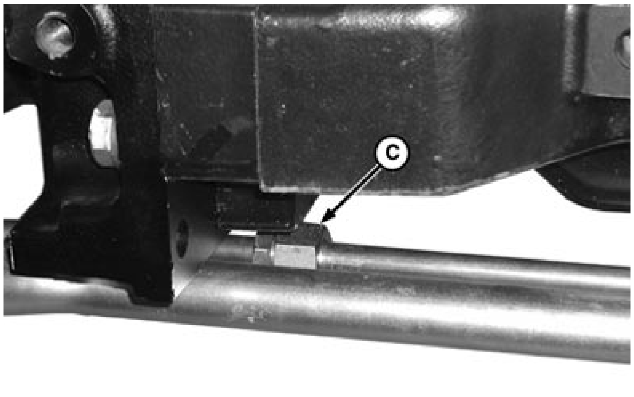
A—Hydraulic Pump Suction Line
B—Hydraulic Steering Supply Line
C—Main Hydraulic Supply Line


B
A
LV11308 –UN–20OCT04

4-Cylinder


A
B
LV11309 –UN–20OCT04

5-Cylinder

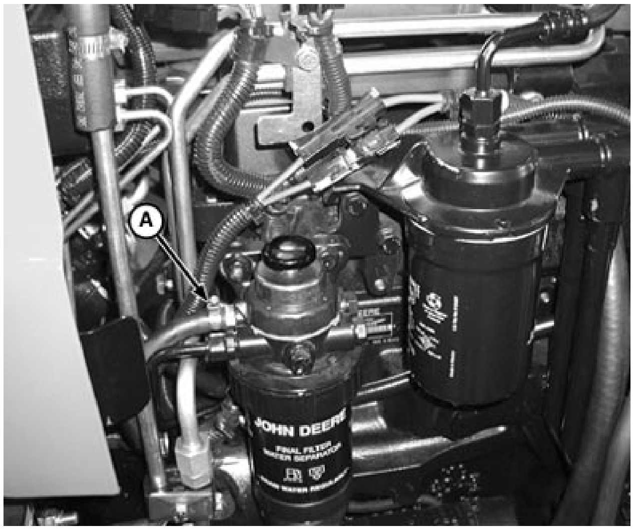

C
LV11310 –UN–20OCT04

Continued on next page

OUO6083,00080EA –19–30SEP04–8/12

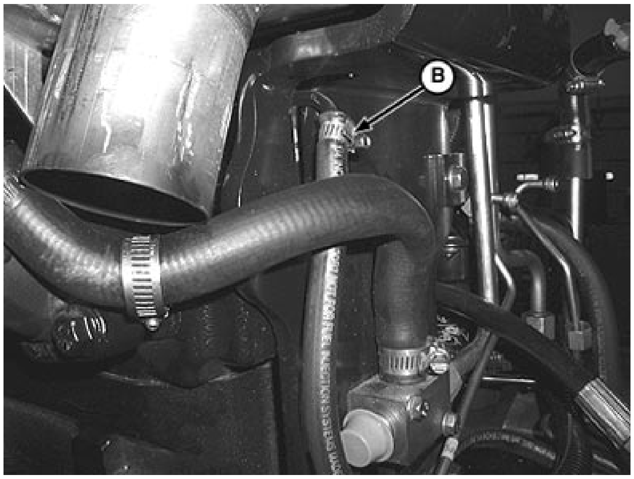
21. Connect fuel supply and return hoses (A and B).

A—Fuel Supply Hose
B—Fuel Return Hose


A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR

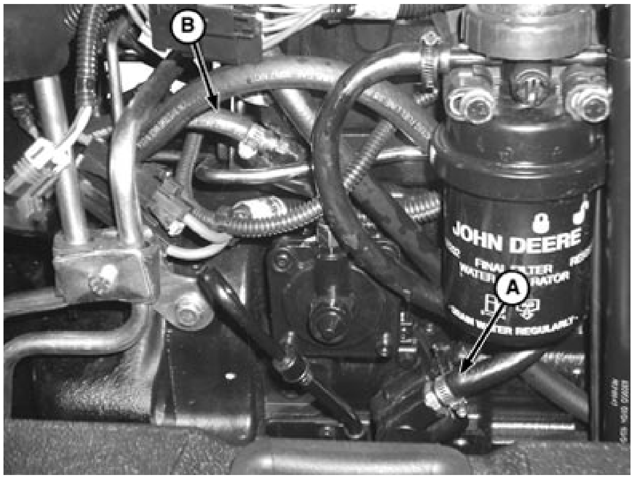
LV10899 –UN–06OCT04

4-Cylinder Supply Hose



LV11307 –UN–20OCT04

4-Cylinder Return Hose


B
A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR

LV11306 –UN–20OCT04

5-Cylinder Hoses

Continued on next page

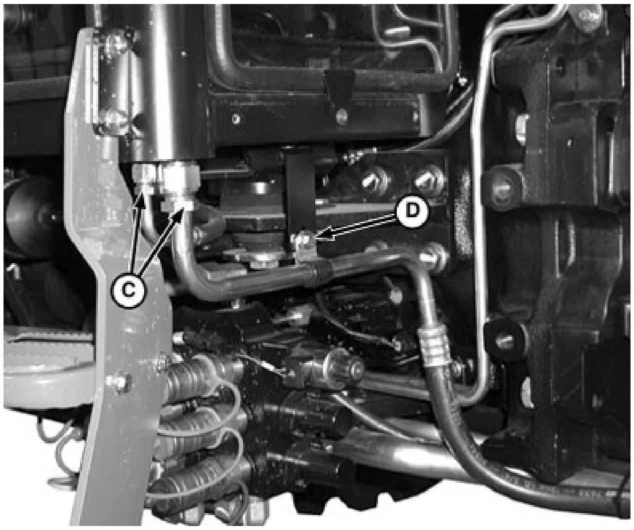
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

22. Cab Tractors: Connect air conditioning lines (C) and install clamp (D). Replace both O-rings. Used or damaged O-rings and seals will leak.

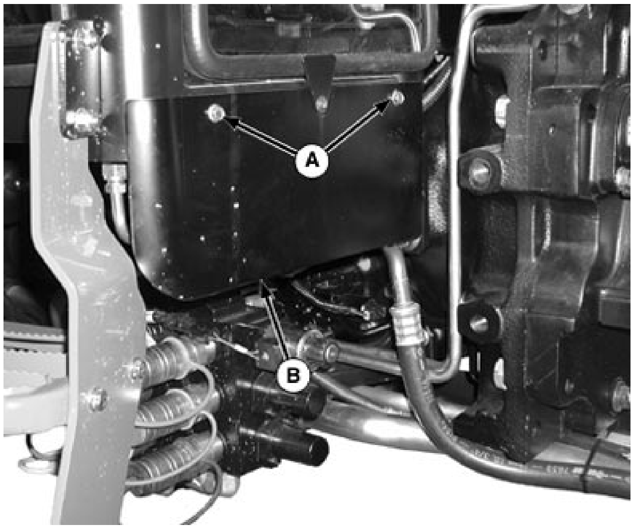
23. Cab Tractors: Install right-hand side crop guard (B) with cap screws (A).

24. Install MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

A—Cap Screw (2 used)
B—Right-Hand Side Crop Guard
C—Air Conditioning Line (2 used)
D—Clamp



LV10898 –UN–06OCT04



LV10897 –UN–06OCT04

Continued on next page

OUO6083,00080EA –19–30SEP04–10/12

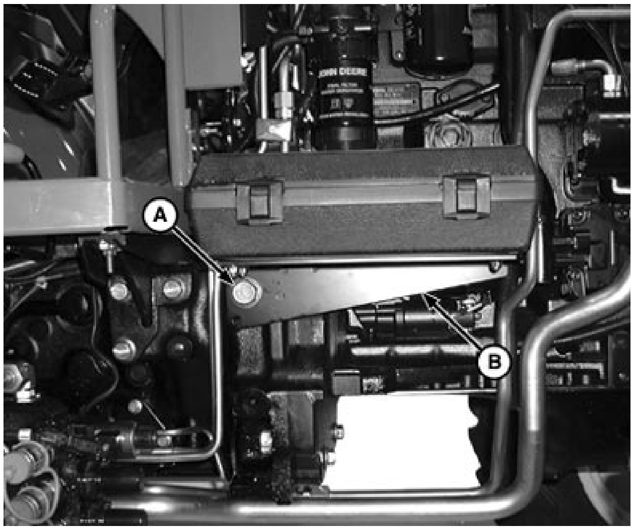
25. Install toolbox and bracket (B) with cap screw (A), if equipped.

26. Fill radiator with coolant.

27. Connect battery, negative (—) cable last.

28. Cab Tractors: Flush, evacuate and charge air conditioning system. (See Flush Air Conditioning System, Evacuate Air Conditioning System, and Charge Air Conditioning System in Section 90, Group 20.)

29. Run engine to circulate coolant. Check coolant level and replenish as necessary.

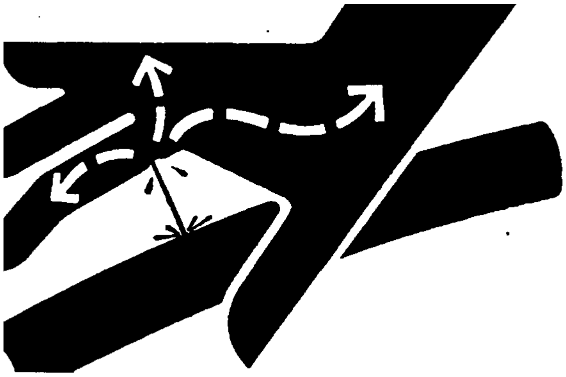


LV10916 –UN–06OCT04

A—Cap Screw
B—Toolbox and Bracket

OUO6083,00080EA –19–30SEP04–11/12

CAUTION: DO NOT use hands to check for leaks with fluid under pressure. Escaping fluid under pressure can penetrate the skin causing serious injury. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 –UN–23AUG88

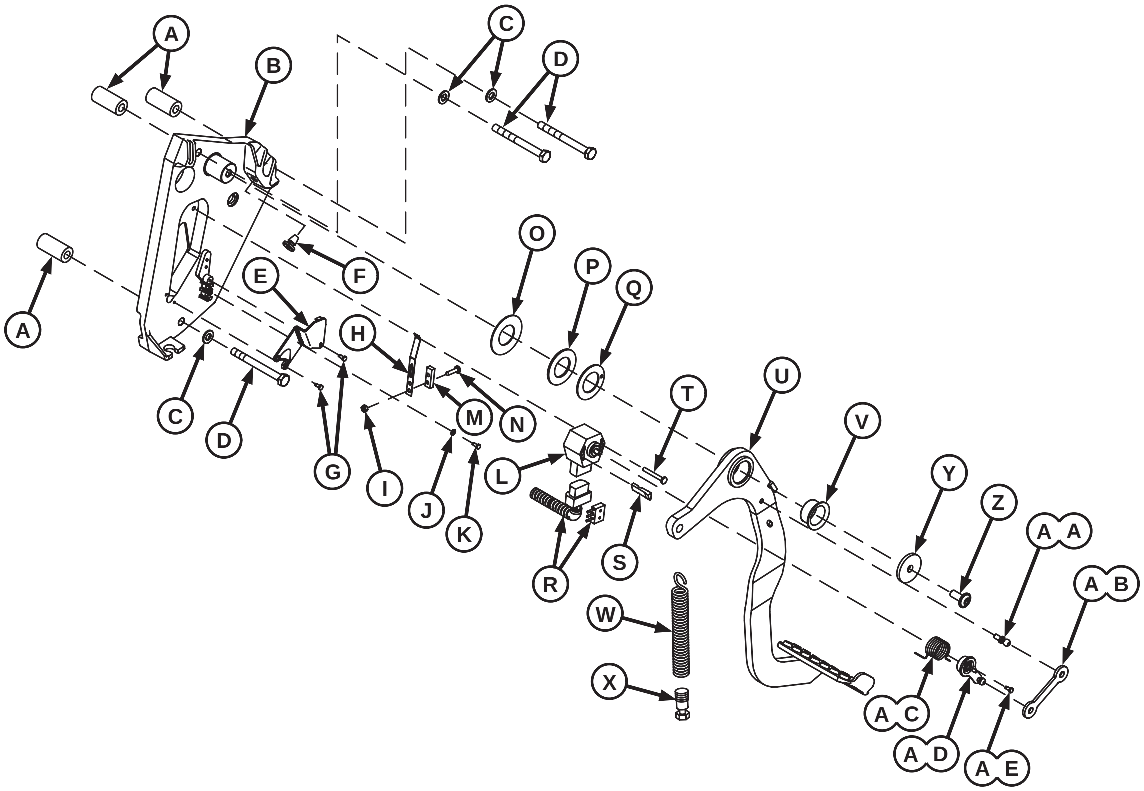
30. Check for hydraulic leaks with engine running. Tighten connections as necessary.

31. Adjust fast idle. (See CTM104 or CTM301.)

32. Install hood (See Remove and Install Hood in Section 80, Group 25.).

OUO6083,00080EA –19–30SEP04–12/12

Inspect and Repair Clutch Pedal and Linkage—Straddle Mount (POWRREVERSER™ Transmissions)



LV10850 –UN–04OCT04

A—Spacers
B—Mounting Bracket
C—Washers
D—Cap Screws
E—Bracket
F—Stop
G—Cap Screw (3 used)
H—Leaf Spring
I—Nut (2 used)
J—Washer
K—Cap Screw
L—Potentiometer
M—Block
N—Cap Screw (2 used)
O—Spring Washer
P—Washer
Q—Washer
R—Wiring Harness and Connector
S—Stop
T—Cap Screw (2 used)
U—Pedal
V—Bushing
W—Spring
X—Spring Mount
Y—Washer
Z—Socket-Head Cap Screw
AA—Ball Stud
AB—Link
AC—Spring
AD—Linkage
AE—Screw

1. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
2. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Remove bushing (V) only if replacement is necessary.

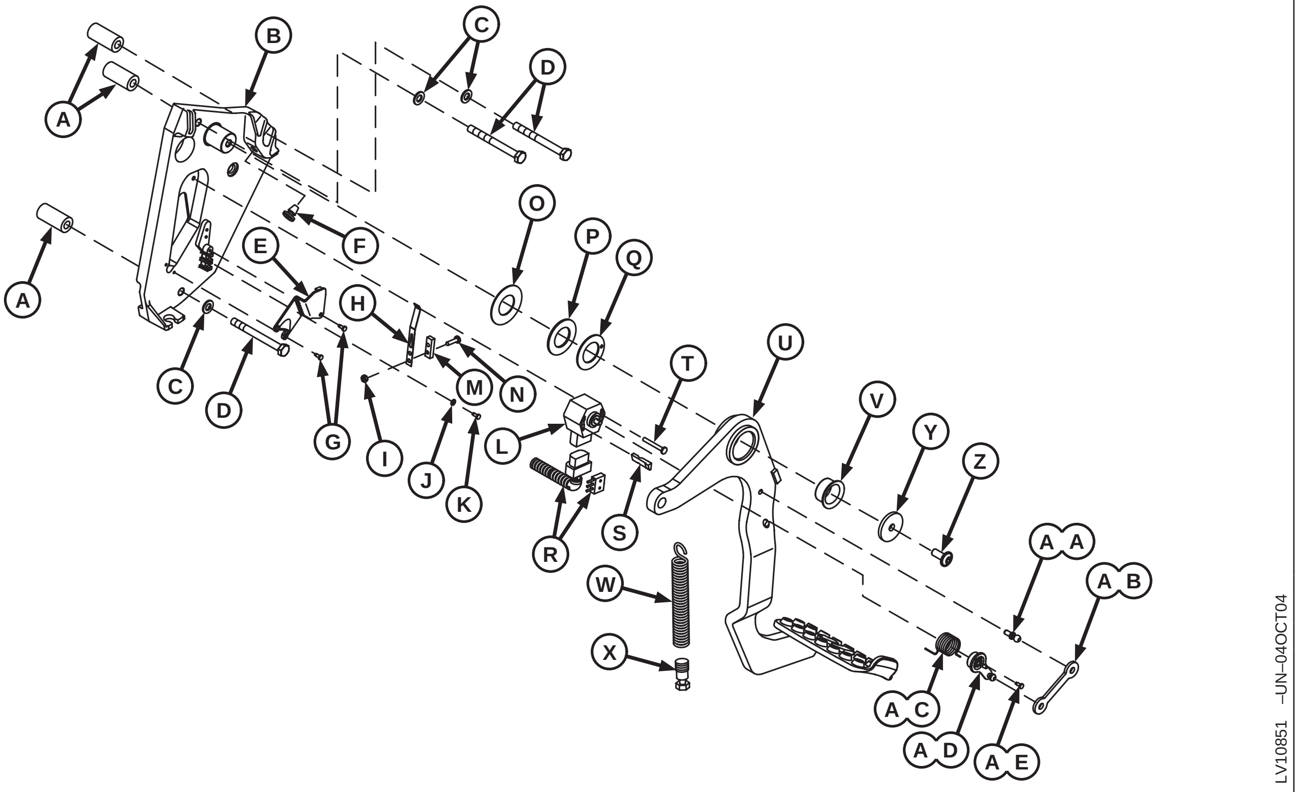
3. Inspect bushing (V) for wear or damage. Replace if necessary.

   Replace bushings using a bearing, bushing, and seal driver set. Install bushings flush with pedal surface.

4. Apply Moly High Temperature EP Grease to ID of bushings.
5. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

POWRREVERSER is a trademark of Deere & Company

Inspect and Repair Clutch Pedal and Linkage—Isolated Open Operator Station and Cab Tractors (POWRREVERSER™ Transmissions)



A—Spacers
B—Mounting Bracket
C—Washers
D—Cap Screws
E—Bracket
F—Stop
G—Cap Screw (3 used)
H—Leaf Spring
I—Nut (2 used)
J—Washer
K—Cap Screw
L—Potentiometer
M—Block
N—Cap Screw (2 used)
O—Spring Washer
P—Washer
Q—Washer
R—Wiring Harness and Connector
S—Stop
T—Cap Screw (2 used)
U—Pedal
V—Bushing
W—Spring
X—Spring Mount
Y—Washer
Z—Socket-Head Cap Screw
AA—Ball Stud
AB—Link
AC—Spring
AD—Linkage
AE—Screw

1. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)
2. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Remove bushing (V) only if replacement is necessary.

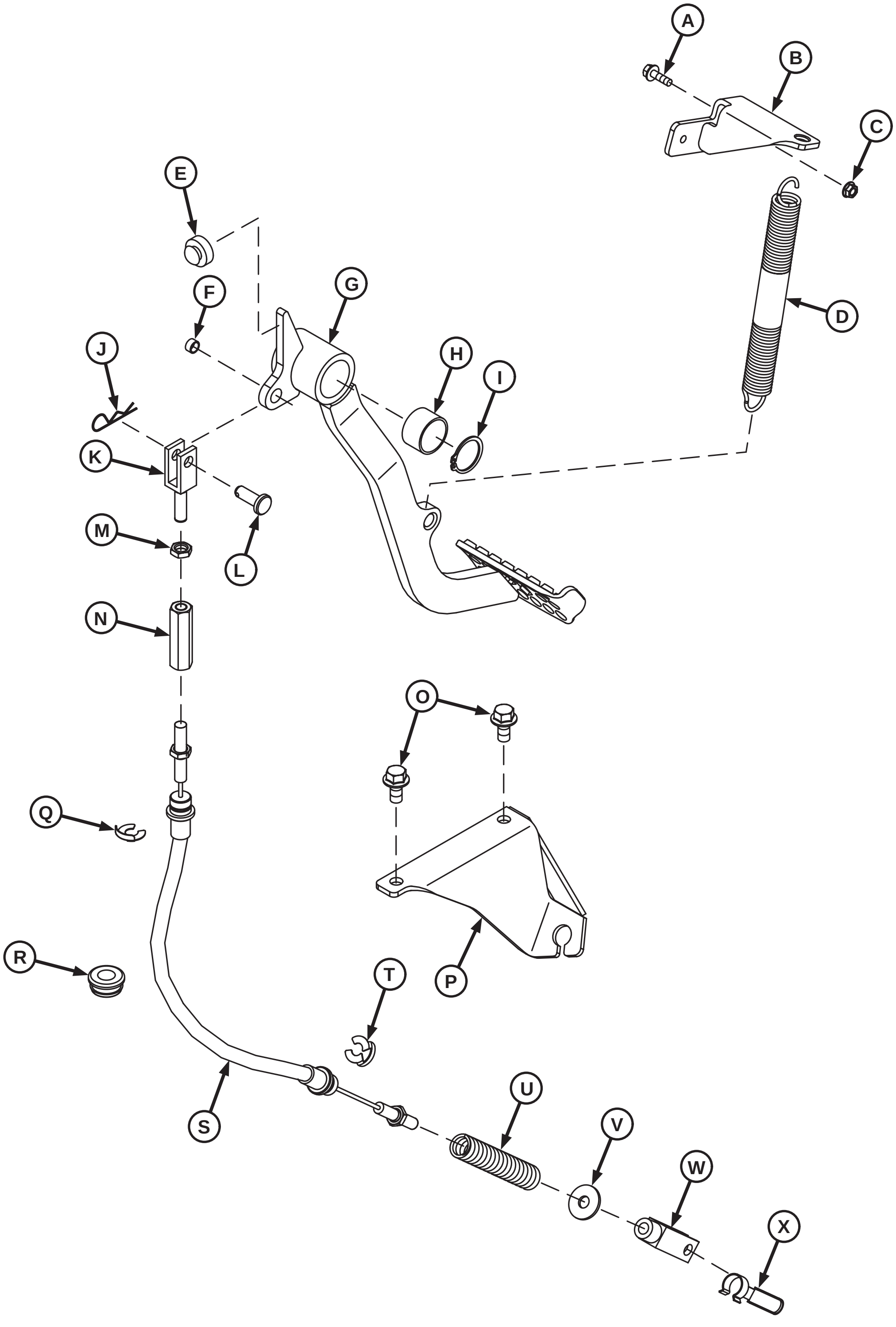
3. Inspect bushing (V) for wear or damage. Replace if necessary.

   Replace bushings using a bearing, bushing, and seal driver set. Install bushings flush with pedal surface.

4. Apply Moly High Temperature EP Grease to ID of bushings.
5. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

POWRREVERSER is a trademark of Deere & Company

Inspect and Repair Clutch Pedal and Linkage—Straddle Mount (SYNCSHUTTLE™ Transmissions)



LV10852 –UN–04OCT04

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

OUO1073,0001D94 –19–24SEP04–1/2

A—Cap Screw
B—Bracket
C—Nut
D—Spring
E—Stop
F—Bushing
G—Pedal
H—Bushing (2 used)
I—Snap Ring
J—Pin
K—Clevis
L—Pin
M—Nut
N—Turnbuckle
O—Cap Screws
P—Bracket
Q—Retainer Clip
R—Grommet
S—Clutch Cable
T—Retainer Clip
U—Spring
V—Washer
W—Clevis
X—Clip Pin

1. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

2. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Remove bushings only if replacement is necessary.

3. Inspect bushings (H and F) for wear or damage. Replace if necessary.

   Replace bushings using a bearing, bushing, and seal driver set. Install bushings flush with pedal surface.

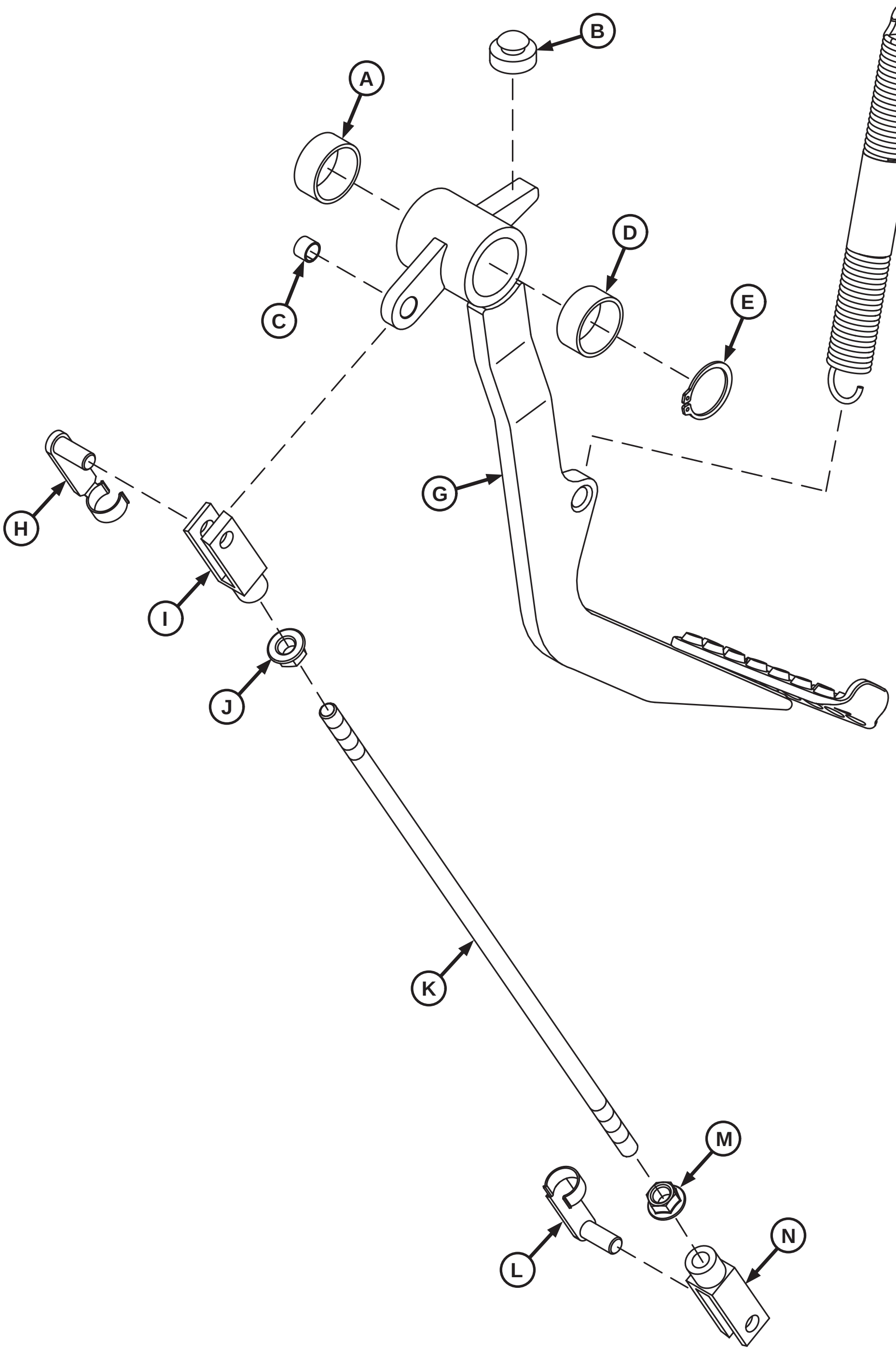
4. Apply Moly High Temperature EP Grease to ID of bushings.

5. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

6. Adjust clutch pedal free play. (See Reference 251-15-001, Checking and Adjusting Clutch Pedal Free Play in TM2197 Section 251, Group 15.)

OUO1073,0001D94 –19–24SEP04–2/2

Inspect and Repair Clutch Pedal and Linkage—Isolated Open Operator Station and Cab Tractors (SYNCSHUTTLE™ Transmissions)



LV10853 –UN–04OCT04

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

A—Bushing
B—Stop
C—Bushing
D—Bushing
E—Snap Ring
F—Spring
G—Clutch Pedal
H—Clip Pin
I—Clevis
J—Nut
K—Linkage
L—Clip Pin
M—Nut
N—Clevis

1. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

2. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Remove bushings (A, C, and D) only if replacement is necessary.

3. Inspect bushings (A, C, and D) for wear or damage. Replace if necessary.

   Replace bushings using a bearing, bushing, and seal driver set. Install bushings flush with pedal surface.

4. Apply Moly High Temperature EP Grease to ID of bushings.

5. Adjust clutch pedal free play. (See Reference 251-15-001, Checking and Adjusting Clutch Pedal Free Play in TM2197 Section 251, Group 15.)

6. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

JG31785,00000E2 –19–12OCT04–1/5

Clutch Alignment Tool JDG689

Used to align PTO clutch disk during installation of clutch assembly.

JG31785,00000E2 –19–12OCT04–2/5

Clutch Repair Fixture JDG1337

Disassemble and assemble clutch.

JG31785,00000E2 –19–12OCT04–3/5

Clutch Finger Height Gauge JDG1375

Used to adjust traction and PTO clutch finger height.

JG31785,00000E2 –19–12OCT04–4/5

Clutch Alignment Tool JDG689

Used to align clutch disk during installation on flywheel.

JG31785,00000E2 –19–12OCT04–5/5

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

Continued on next page

JG31785,00000E3 –19–12OCT04–1/2

Bushing, Bearing, and Seal Driver Set

Used to replace bushings of armshafts and to install seal in traction clutch shaft.

Other Material

Number	Name	Use
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to PTO and traction clutch armshafts, clutch yoke shoes, clutch release bearing guide, ID of clutch release bearing assembly, traction clutch shaft splines, and PTO clutch shaft splines.
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cleans parts and speeds cure of sealant on traction clutch yoke-to-armshaft cap screw threads.
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to PTO and traction clutch yoke-to-armshaft cap screw threads.

LOCTITE is a trademark of Loctite Corp.

Specifications

Item	Measurement	Specification
PTO Clutch Disk	Thickness	7.6—6.6 mm (0.300—0.260 in.)
Clutch Assembly Mounting Cap Screw	Torque	36 N•m (27 lb-ft)
Traction Clutch Disk	Thickness	10—6 mm (0.395—0.235 in.)
Clutch Pressure Plate		
PTO Clutch Pressure Plate	Thickness	16.2 mm (0.638 in.) minimum
Traction Clutch Front Pressure Plate	Thickness	26.7 mm (1.051 in.) minimum
Traction Clutch Rear Pressure Plate	Thickness	15.8 mm (0.622 in.) minimum
Clutch Spring Washer	Height	13 mm (0.512 in.)
Clutch Yoke Cap Screw	Torque	65 N•m (48 lb-ft)

JG31785,00000E5 –19–12OCT04–1/1

Remove and Install Clutch Assembly

NOTE: Clutch assembly can be removed and installed without any finger adjustment procedures.

If clutch assembly has been disassembled for inspection or repair, see PTO Clutch Finger Adjustment and Traction Clutch Finger Adjustment procedures in Section 50, Group 10.

1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

CAUTION: Clutch assembly is heavy. Support clutch before removing cap screws to prevent personal injury.

2. Remove six cap screws (A) and clutch assembly.

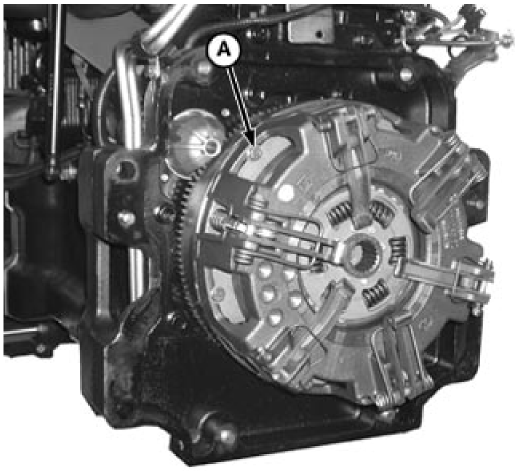
NOTE: PTO clutch disk is loose, located between flywheel and clutch assembly after removal of clutch. Note the side of clutch disk that faces the flywheel.

3. Make repairs as necessary. (See procedures in Section 50, Group 10.)

NOTE: 5-cylinder tractors, from factory, are equipped with standard three-pad PTO clutch disk. All tractors are serviced with high-capacity four-pad PTO clutch disk.

4. Inspect and replace PTO clutch disk if friction surfaces are contaminated with grease or oil, or if thickness of disk is not within specifications.

Specification	
PTO Clutch Disk—Thickness	7.6—6.6 mm (0.300—0.260 in.)



LV11252 –UN–14OCT04

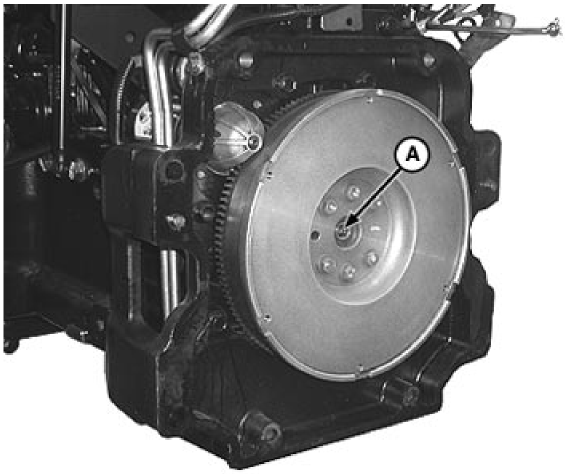
A—Cap Screw (6 used)

Continued on next page

JG31785,00000E6 –19–12OCT04–1/3

5. Inspect pilot bearing (A) for wear or damage. Replace if necessary. (See procedure in CTM104 or CTM301.)

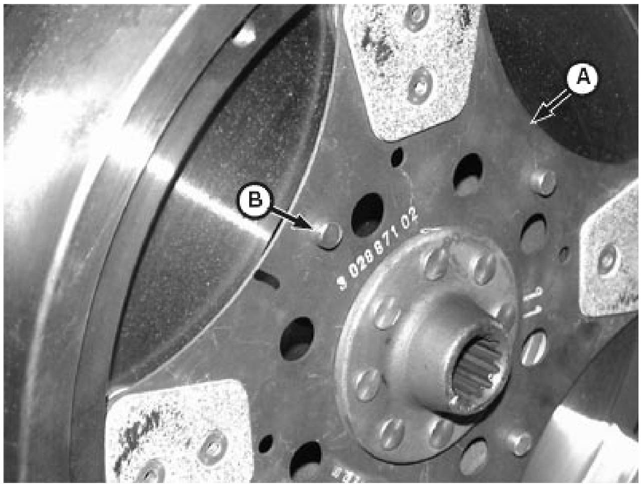
A—Pilot Bearing



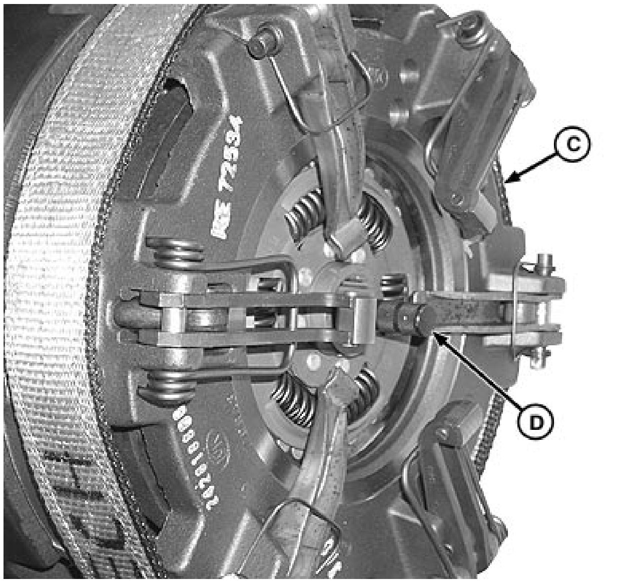
LV11253 –UN–14OCT04

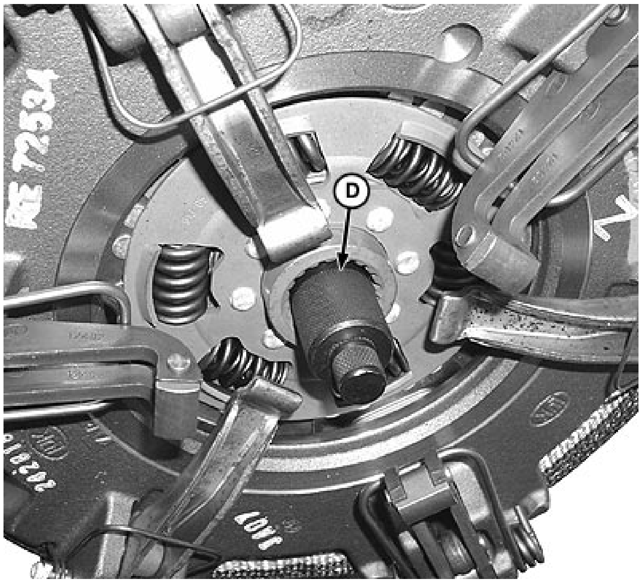
Continued on next page

JG31785,00000E6 –19–12OCT04–2/3



High-Capacity Four-Pad PTO Clutch Disk Shown





A—PTO Clutch Disk
B—Alignment Pin (4 used)
C—Clutch Assembly
D—Clutch Alignment Tool JDG689

IMPORTANT: When installing the PTO clutch disk (A), make sure the side of the disk stamped "Flywheel Side" faces the engine flywheel and that the alignment pins (B) face the rear of the tractor.

NOTE: To aid during installation of clutch assembly to flywheel, use JDG689 clutch alignment tool (D) to align and rotate PTO clutch disk (A) while the clutch cap screws are being tightened.

6. Install and position the PTO clutch disk (A) against the flywheel. Make sure the alignment pins (B) are facing away from engine.

7. Install the clutch assembly (C) over PTO clutch disk (A) using JDG689 Clutch Alignment Tool. Install cap screws and evenly tighten in a crisscross pattern to specification.

Specification	
Clutch Assembly Mounting Cap Screw—Torque	36 N•m (27 lb-ft)

8. After cap screws are tightened to specifications, make sure PTO clutch disk rotates freely. Remove clutch alignment tool.

9. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

JG31785,00000E6 –19–12OCT04–3/3

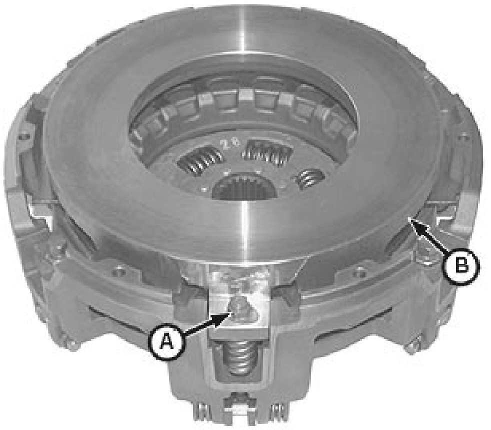
Disassemble and Inspect Clutch Assembly

NOTE: Do not reuse three lock nuts (A). New lock nuts are available through the parts catalog.

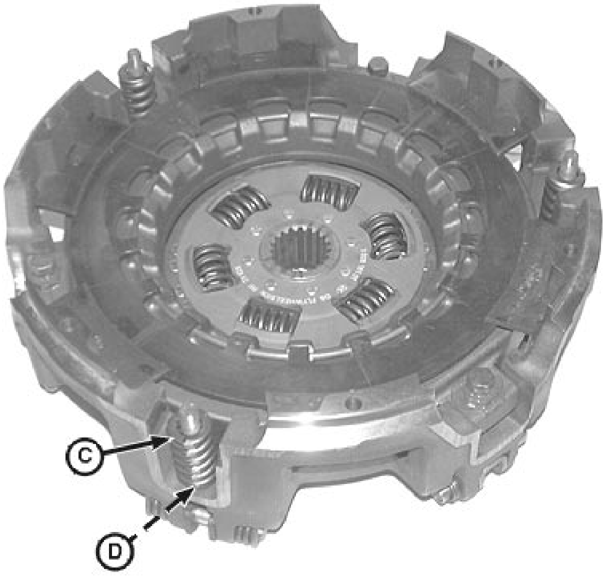
1. Remove three lock nuts (A) and PTO pressure plate (B). Discard three lock nuts (A) after removal.

2. Clean any rust or oil from PTO pressure plate drive surface. Inspect drive surface for distortion, cracks and heat damage. Replace if necessary.

3. Remove three springs (C) and washers (D).



LV5351 –UN–01NOV00



LV4660 –UN–18FEB00

A—Lock Nut (3 used)
B—PTO Pressure Plate
C—Spring (3 used)
D—Washer (3 used)

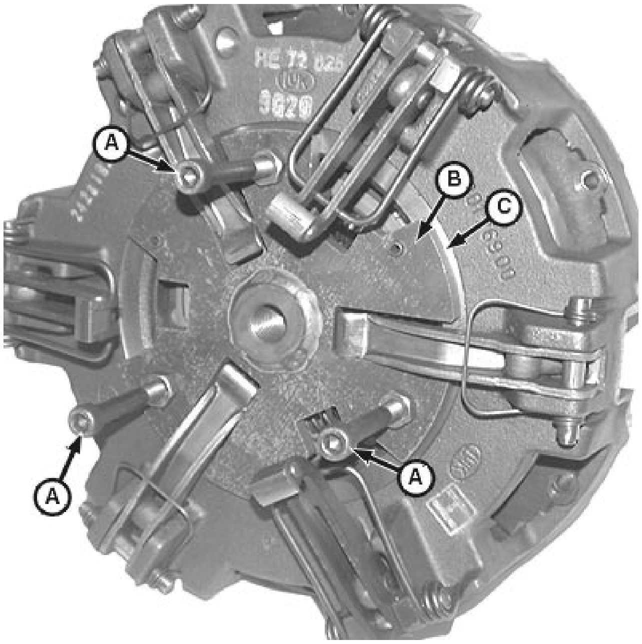
Continued on next page

JG31785,00000E7 –19–12OCT04–1/8

NOTE: The heads of three adjustable socket head screws (A) on JDG1337 Clutch Repair Fixture are used to support the clutch assembly on a flat surface during disassembly.

4. Install the clutch support plate (B) flush with machined surface (C) on back of clutch.

A—Adjustable Socket Head Screw (3 used)
B—Clutch Support Plate (Part of JDG1337)
C—Machined Surface



LV4661 –UN–18FEB00

Support Plate

Continued on next page

JG31785,00000E7 –19–12OCT04–2/8

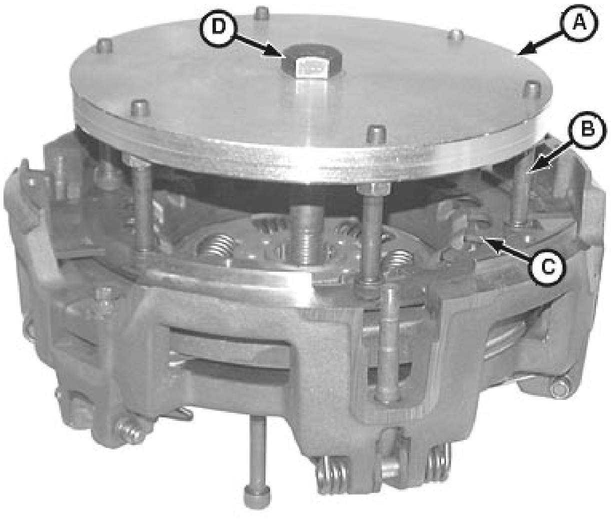
5. Position clutch and support plate on flat work area.

6. Install compression plate (A) on flywheel side of clutch. Adjust all six bolts (B) until touching large spring washer (C).

7. Make sure all six bolts (B) are resting on large spring washer (C) and not on any of the six spring washer retainers (E) located around the clutch.

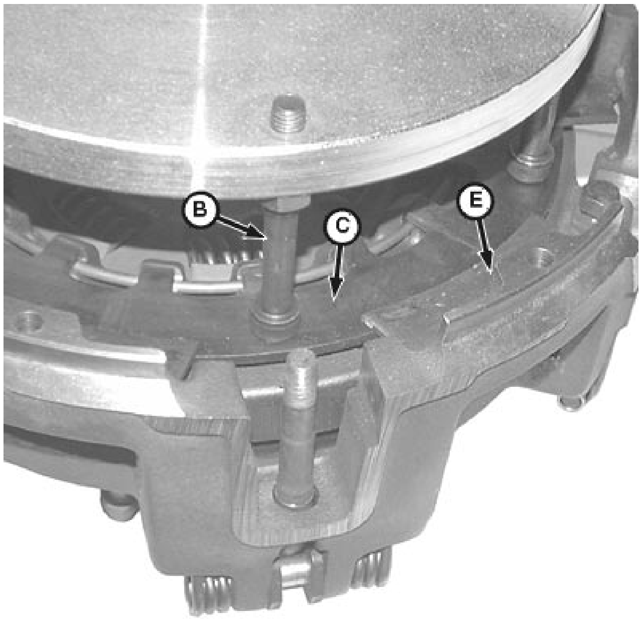
8. Finger-tighten bolt (D) into threaded hole in center of bottom support plate.

A—Compression Plate (Part of JDG1337)
B—Bolt (6 used)
C—Large Spring Washer
D—Bolt
E—Spring Washer Retainer (6 used)



LV4662 –UN–18FEB00

Compression Plate



LV4664 –UN–18FEB00

Continued on next page

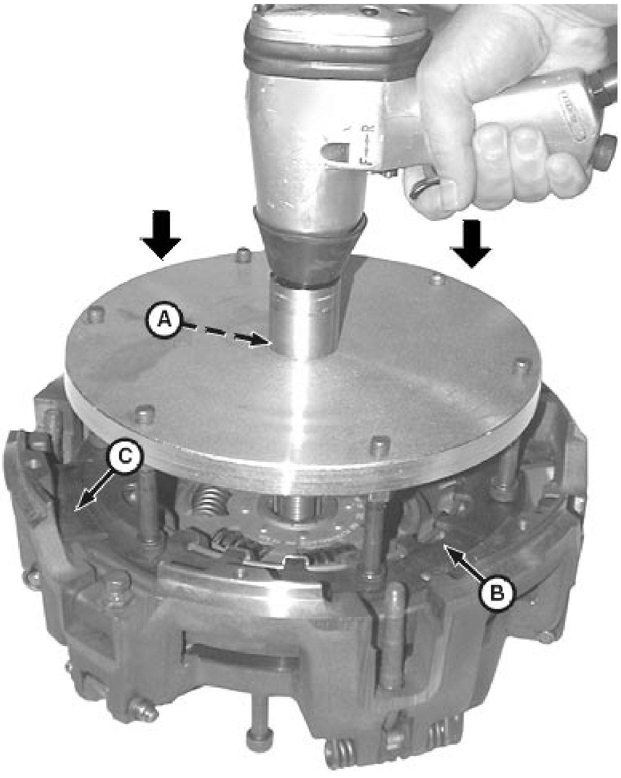
JG31785,00000E7 –19–12OCT04–3/8

IMPORTANT: Use short bursts from a pneumatic impact wrench to tighten bolt in center of clutch compression plate until all six spring washer retainers can be removed.

9. Slowly tighten bolt (A) in center of compression plate to compress large spring washer (B) and remove six spring washer retainers (C).

10. After all six spring washer retainers (C) have been removed, slowly loosen bolt (A) to relieve tension of large spring washer (B).

11. Remove clutch compression plate from clutch assembly.



LV4665 –UN–18FEB00

A—Bolt
B—Large Spring Washer
C—Retainer (6 used)

Continued on next page

JG31785,00000E7 –19–12OCT04–4/8

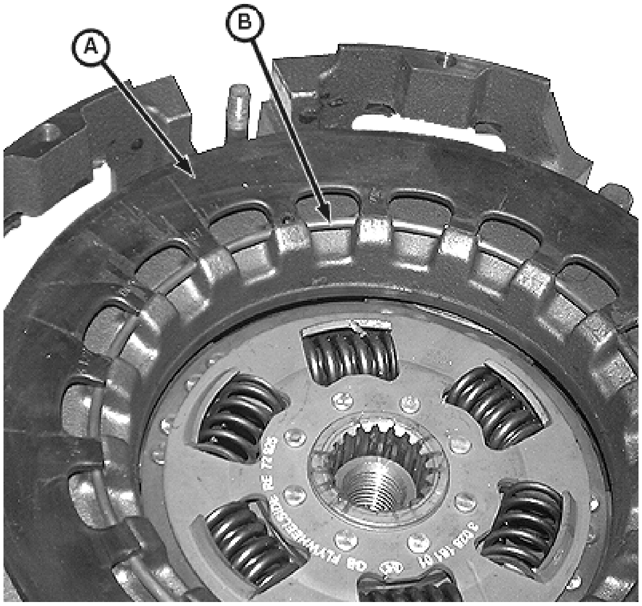
12. Remove spring washer (A) and ring (B).

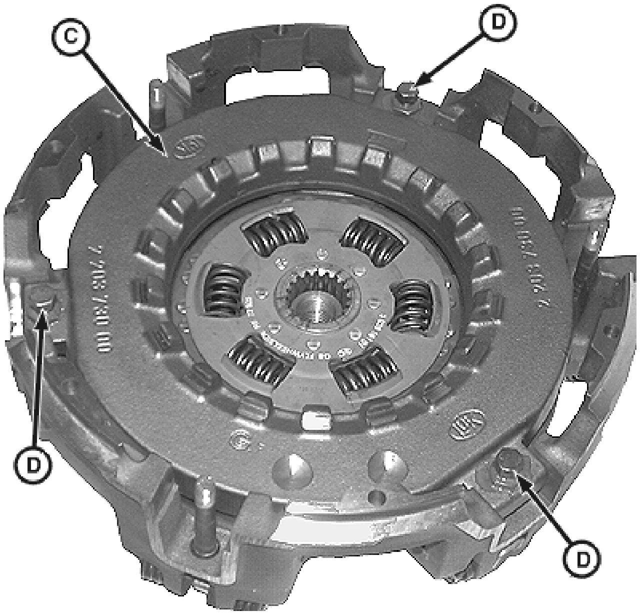
NOTE: Do not loosen or remove three lock nuts and cap screws (D) on traction clutch front pressure plate (C).

13. Remove traction clutch front pressure plate (C).

14. Clean any rust or oil from traction clutch front pressure plate drive surface. Inspect drive surface for distortion, cracks and heat damage. Replace if necessary.

A—Spring Washer
B—Ring
C—Traction Clutch Front Pressure Plate
D—Lock Nut and Cap Screw (3 used)





Continued on next page

NOTE: Note the direction of raised center hub (B) to aid during installation.

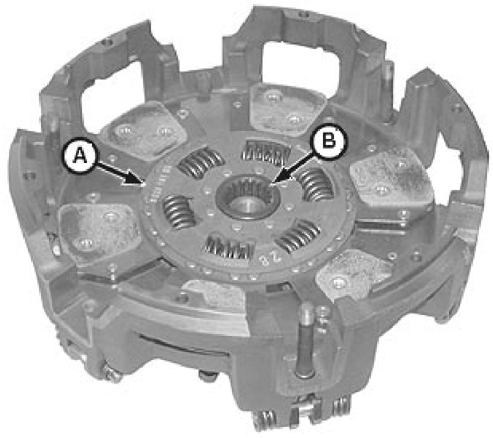
15. Remove traction clutch disk (A). Note the direction of center hub (B) on disk (A) to aid during installation.

IMPORTANT: During inspection, if traction clutch disk thickness is within 6—6.25 mm (0.235—0.246 in.), it is recommended that the traction clutch disk be replaced.

16. Inspect and replace traction clutch disk if friction surfaces are contaminated with grease or oil or if thickness of disk is not within specification.

Specification

Traction Clutch Disk—Thickness .... 10—6 mm (0.395—0.235 in.)



A—Traction Clutch Disk
B—Center Hub

JG31785,00000E7 –19–12OCT04–6/8

17. Machine drive surfaces of pressure plates, if necessary, until surface is free of scores, cracks and heat discoloration.

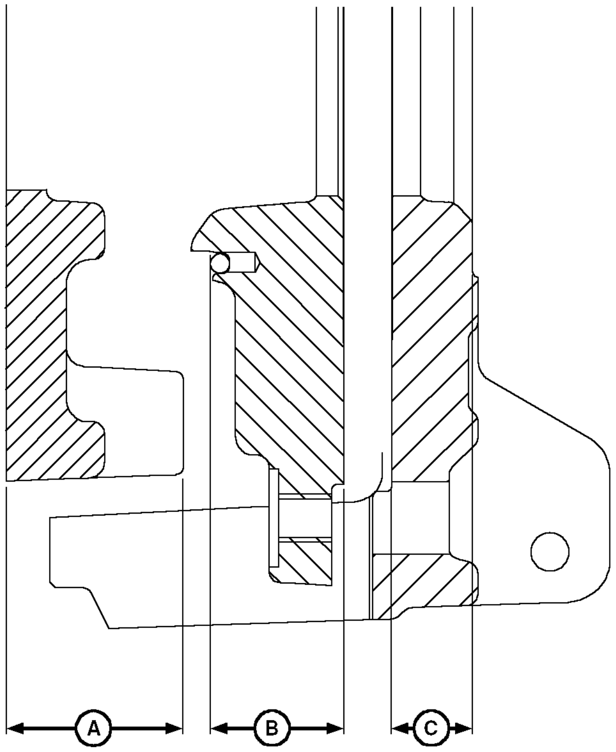
18. Measure the thickness of pressure plates at dimensions (A, B and C). Replace parts that are not within specification.

Clutch Pressure Plate—Specification

PTO Clutch Pressure Plate—Thickness... 16.2 mm (0.638 in.) minimum

Traction Clutch Front Pressure Plate—Thickness... 26.7 mm (1.051 in.) minimum

Traction Clutch Rear Pressure Plate—Thickness... 15.8 mm (0.622 in.) minimum



A—PTO Clutch Pressure Plate
B—Traction Clutch Front Pressure Plate
C—Traction Clutch Rear Pressure Plate

Continued on next page

JG31785,00000E7 –19–12OCT04–7/8

NOTE: Bushing (D) is crimped. If replacing bushing, make sure new bushing is securely crimped to pin (F).

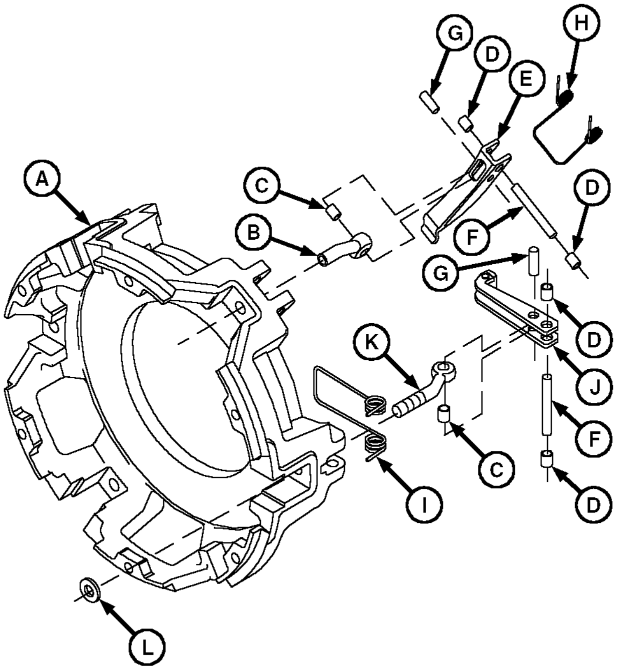
PTO clutch and traction clutch finger assemblies are serviced as separate kits. Kits are available through the parts catalog.

19. Disassemble parts (A—L).

20. Inspect all parts for wear or damage. Replace as necessary.

21. Crimp new bushing (D) to pin (F).

22. Clean any rust or oil from traction clutch rear pressure plate drive surface. Inspect drive surface for distortion, cracks and heat damage. Replace if necessary.

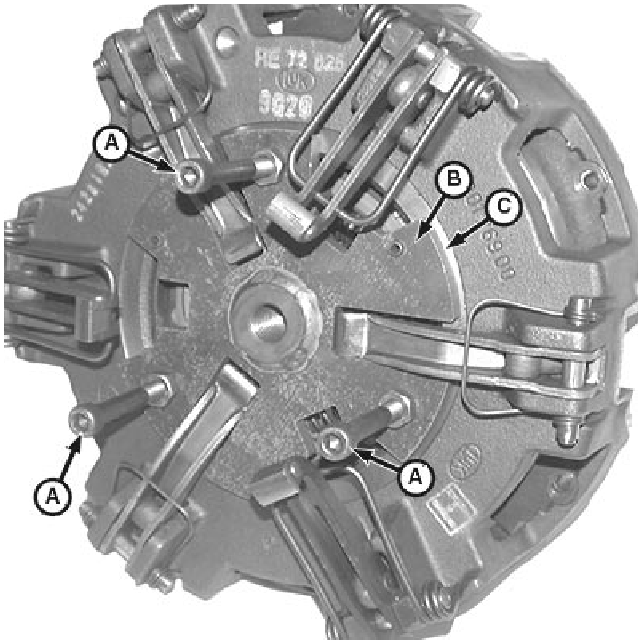


LV4649 –UN–16FEB00

A—Traction Clutch Rear Pressure Plate
B—Adjuster (3 used)
C—Bushing (6 used)
D—Bushing (12 used)
E—Traction Clutch Release Finger (3 used)
F—Pin (6 used)
G—Pin (6 used)
H—Spring (3 used)
I—Spring (3 used)
J—PTO Clutch Release Finger (3 used)
K—Adjuster (3 used)
L—Bushing (3 used)

JG31785,00000E7 –19–12OCT04–8/8

Assemble Clutch Assembly



1. Install support plate (B) flush with machined surface (C) on clutch.
2. Make sure adjustable socket head screws (A) all have equal lengths.
3. Place support plate and clutch on flat work area.

A—Adjustable Socket Head Screw (3 used)
B—Clutch Support Plate (Part of JDG1337)
C—Machined Surface

Continued on next page

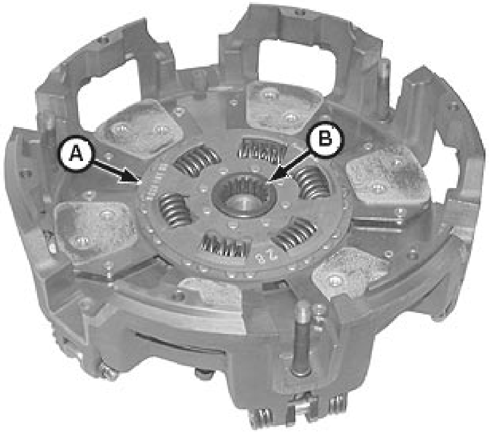
NOTE: Make sure raised hub side of traction clutch disk is facing downward.

Traction clutch disk (A) will align with threaded hub in center of support plate from JDG1337 Clutch Repair Fixture.

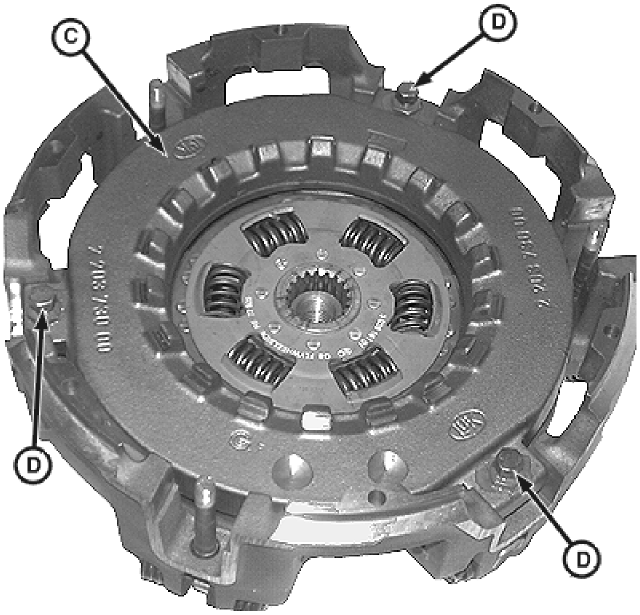
4. Install traction clutch disk (A) with raised hub (B) side downward.

5. Install traction clutch front pressure plate (C). Make sure cap screws (D) seat inside adjusters.

A—Traction Clutch Disk
B—Raised Hub
C—Traction Clutch Front Pressure Plate
D—Cap Screw (3 used)



LV5375 –UN–01NOV00



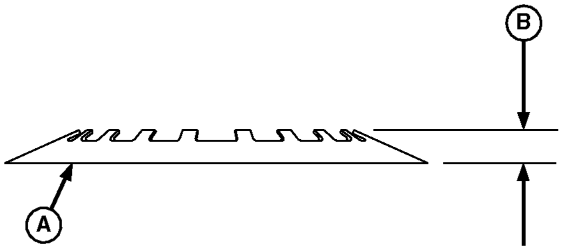
LV4668 –UN–16FEB00

JG31785,00000E8 –19–12OCT04–2/7

6. Place spring washer (A) on a workbench or any flat surface and measure free height dimension (B). Replace spring washer if less than specification.

Specification	
Clutch Spring Washer—Height	13 mm (0.512 in.)

A—Spring Washer
B—Free Height Dimension



LV1611 –UN–07FEB96

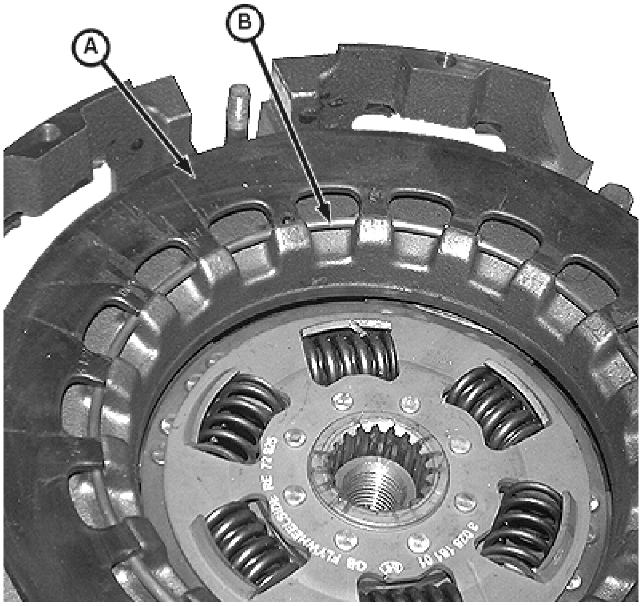
Continued on next page

JG31785,00000E8 –19–12OCT04–3/7

7. Install ring (B) in groove on traction clutch front pressure plate. Make sure split in ring (B) aligns with spring pin on pressure plate.

8. Install spring washer (A) with concave side upward. Make sure notch in spring washer tab aligns with spring pin on pressure plate.

A—Spring Washer
B—Ring



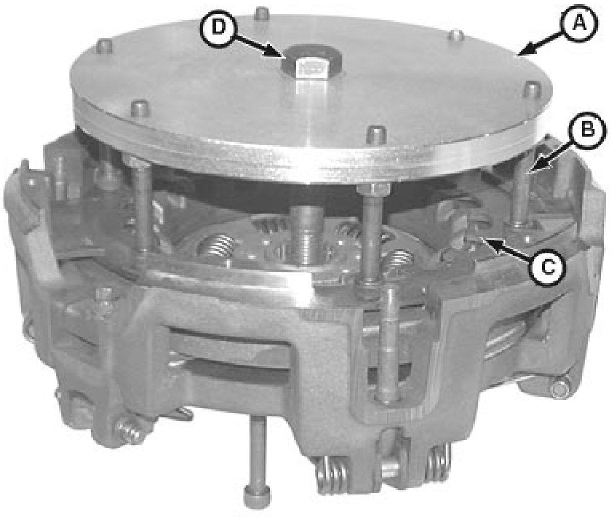
LV4667 –UN–16FEB00

JG31785,00000E8 –19–12OCT04–4/7

9. Install compression plate (A) on flywheel side of clutch. Adjust all six bolts (B) until touching large spring washer (C).

10. Finger-tighten bolt (D) into threaded hole in center of bottom support plate.

A—Compression Plate (Part of JDG1337)
B—Bolt (6 used)
C—Large Spring Washer
D—Bolt



LV4662 –UN–18FEB00

Compression Plate

Continued on next page

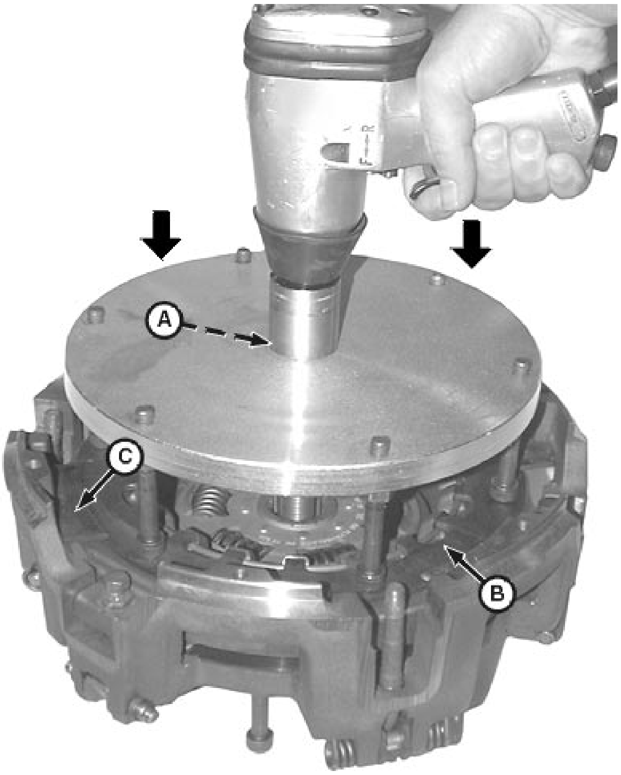
JG31785,00000E8 –19–12OCT04–5/7

IMPORTANT: Use short bursts from a pneumatic impact wrench to tighten bolt in center of clutch compression plate until all six spring washer retainers can be installed.

11. Slowly tighten bolt (A) in center of compression plate to compress large spring washer (B) and install six spring washer retainers (C).

12. After all six spring washer retainers (C) have been installed, slowly loosen bolt (A) to relieve tension of large spring washer (B).

13. Remove clutch compression plate from clutch assembly.



LV4665 –UN–18FEB00

A—Bolt
B—Large Spring Washer
C—Retainer (6 used)

Continued on next page

JG31785,00000E8 –19–12OCT04–6/7

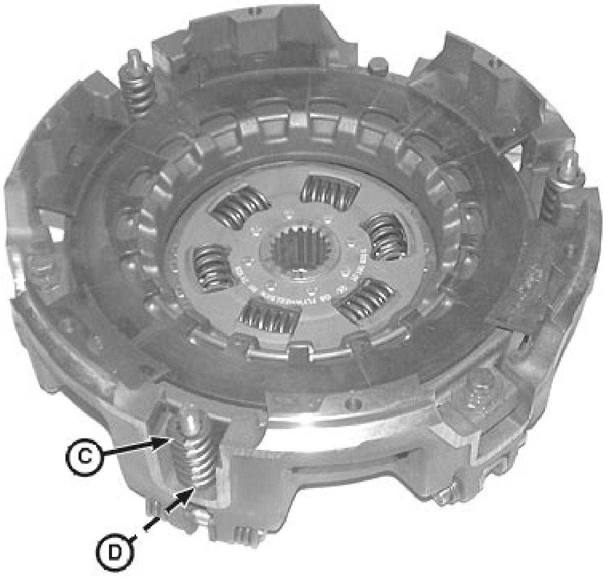
14. Install one washer (D) and spring (C) at three locations around clutch.

NOTE: Do not reuse three lock nuts (A). New lock nuts are available through the parts catalog.

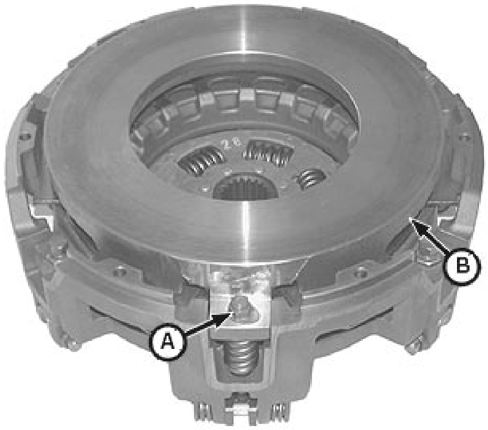
15. Install PTO clutch pressure plate (B). Loosely install three new lock nuts (A).

16. Adjust the PTO and traction clutch finger height. (See PTO Clutch Finger Adjustment and Traction Clutch Finger Adjustment in Section 50, Group 10.)

A—Lock Nut (3 used)
B—PTO Pressure Plate
C—Spring (3 used)
D—Washer (3 used)



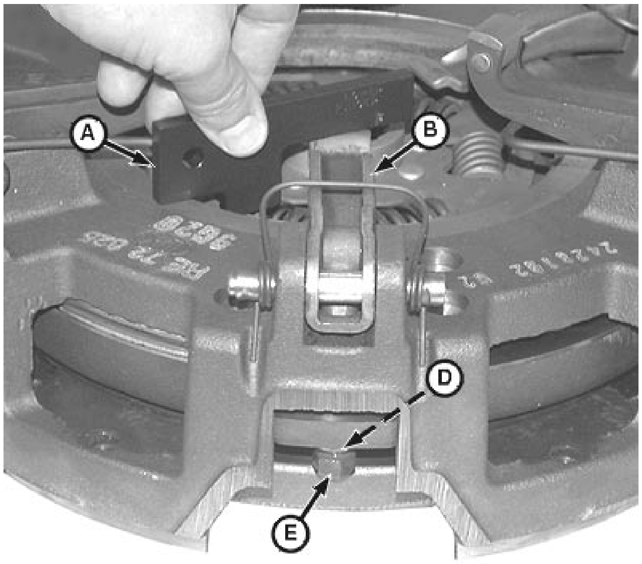
LV4660 –UN–18FEB00



LV5351 –UN–01NOV00

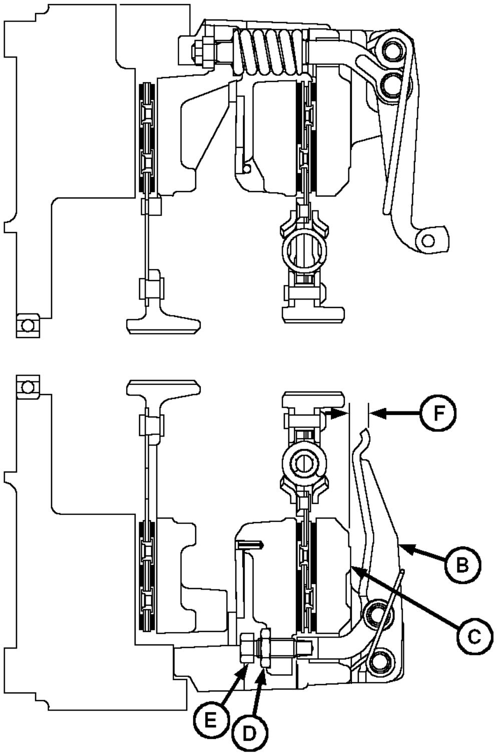
JG31785,00000E8 –19–12OCT04–7/7

Traction Clutch Finger Adjustment



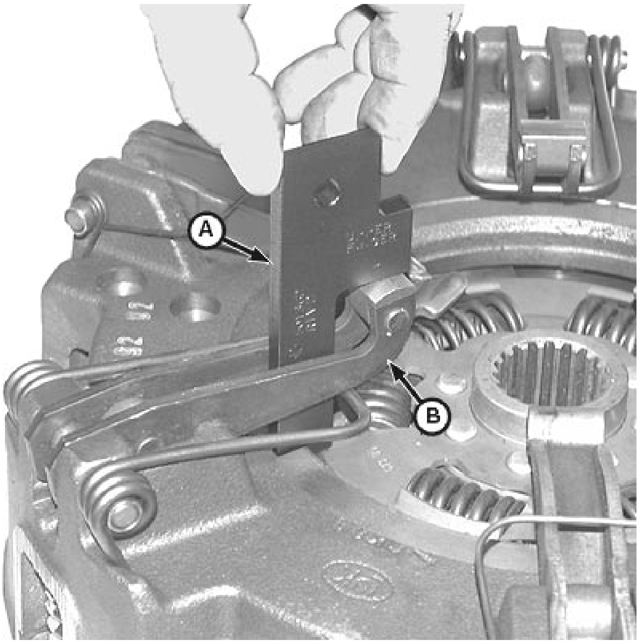
1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)
2. Check finger height distance (F) from machined surface on pressure plate (C) to tip of traction clutch finger (B) using JDG1375 Clutch Finger Height Gauge (A).
3. If adjustment is needed, loosen jam nut (D). Turn adjuster screw (E) in or out until clutch finger touches gauge (A).
4. Tighten jam nut.
5. Repeat procedure for two remaining fingers.
6. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

A—JDG1375 Clutch Finger Height Gauge
B—Traction Clutch Finger
C—Pressure Plate
D—Jam Nut
E—Adjuster Screw
F—Distance



JG31785,00000E9 –19–12OCT04–1/1

PTO Clutch Finger Adjustment



LV4675 –UN–28FEB00

1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

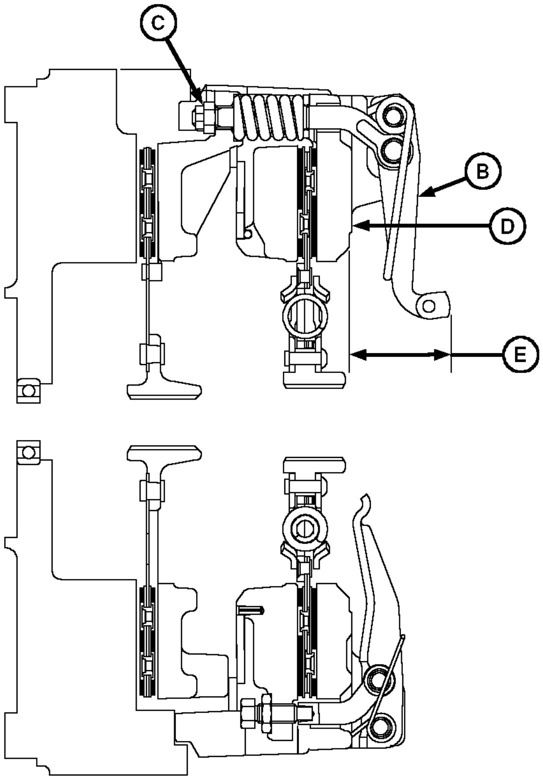
2. Check finger height distance (E) from machined surface on pressure plate (D) to the tip of PTO clutch finger (B) using JDG1375 Clutch Finger Height Gauge (A).

3. If adjustment is needed, turn special nut (C) in or out until clutch finger touches gauge.

4. Repeat procedure for two remaining fingers.

5. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

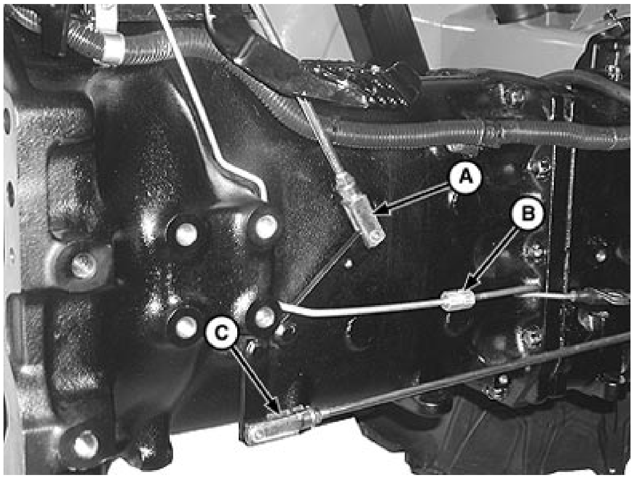
A—JDG1375 Clutch Finger Height Gauge
B—PTO Clutch Finger
C—Special Nut
D—Pressure Plate
E—Distance



LV5378 –UN–15DEC00

JG31785,00000EA –19–12OCT04–1/1

Remove and Inspect Clutch Release Mechanism and Shafts

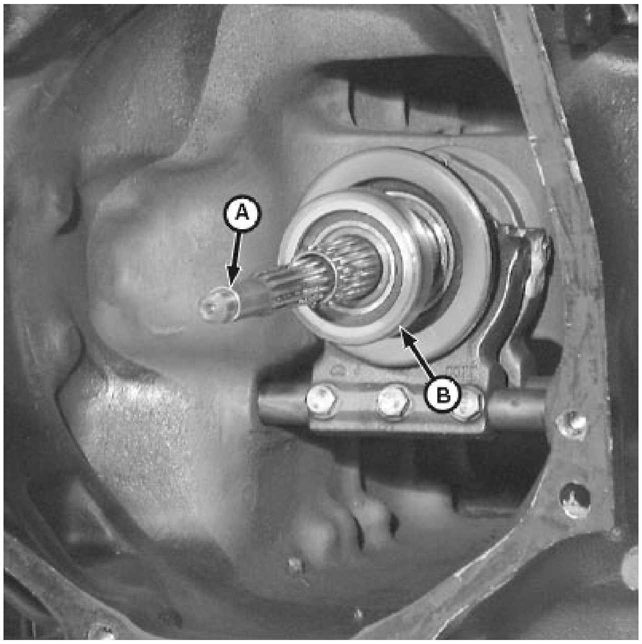


LV11254 –UN–14OCT04

1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)
2. Disconnect brake line (B).
3. Disconnect traction clutch rod (A) and PTO clutch rod (C).

A—Traction Clutch Rod
B—Brake Line
C—PTO Clutch Rod

JG31785,00000EB –19–12OCT04–1/5



LV6643 –UN–10APR01

4. Remove PTO clutch drive shaft (A).
5. Remove clutch release bearing assembly (B).

A—PTO Clutch Drive Shaft
B—Clutch Release Bearing Assembly

Continued on next page

JG31785,00000EB –19–12OCT04–2/5

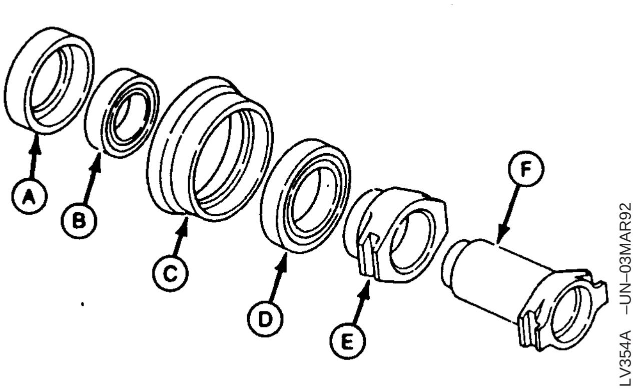
6. Inspect parts (A—F) for wear or damage. Replace as necessary.

NOTE: Bearings (A and C) and bearings (B and D) are press fit.

Remove bearings only if replacement is necessary.

Disassemble parts (A—F) using a knife-edged puller and a press.

Assemble parts using a press.



Clutch Release Bearing Assembly

A—Traction Clutch Release Bearing
B—Bearing
C—PTO Clutch Engagement Bearing
D—Bearing
E—PTO Clutch Sleeve
F—Traction Clutch Sleeve

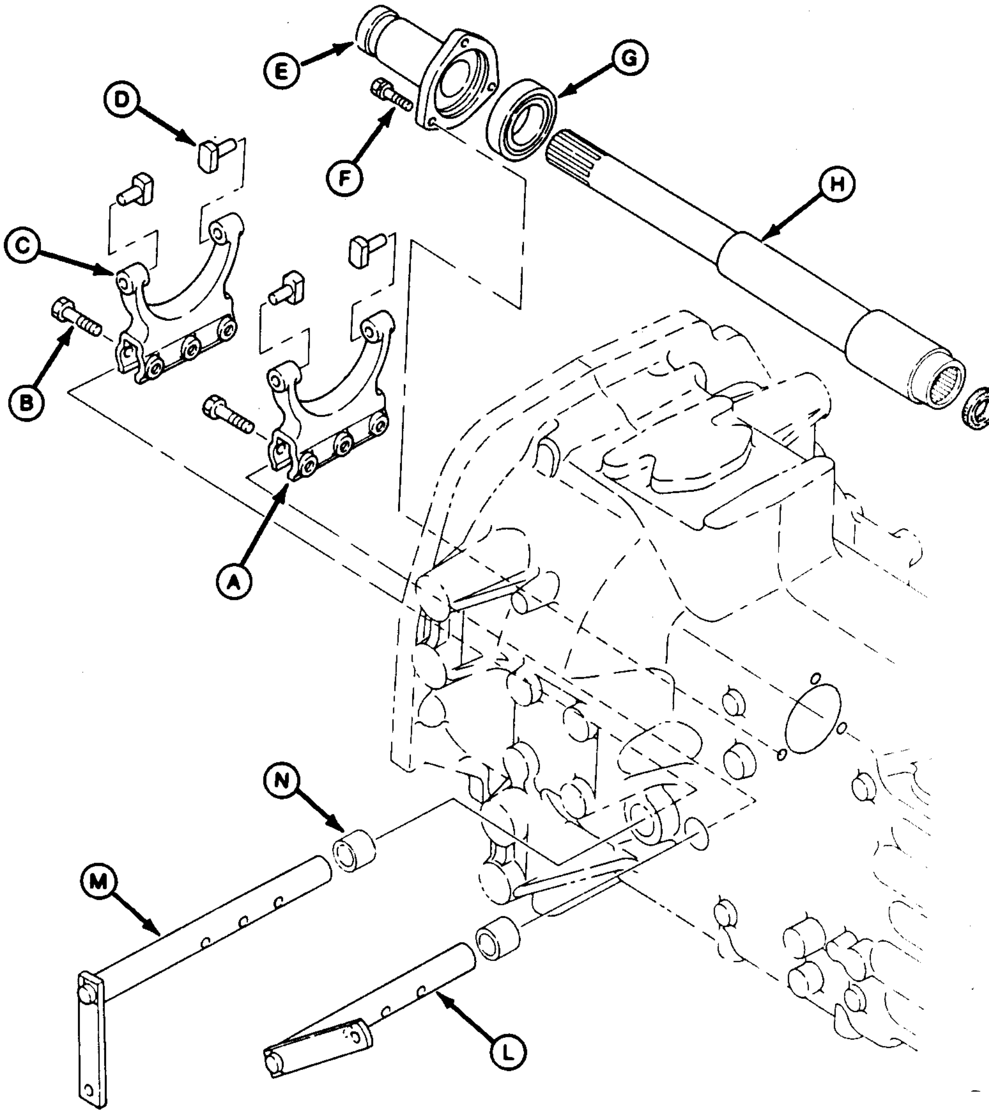
7. Tractors without cab: Remove left step plate.

8. Isolated open operator station and cab tractors: Remove fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

NOTE: Cab tractors: Place a floor jack under left side of cab floor to support cab during removal of left-side cab mounting bracket.

9. Tractors with cab: Install floor jack and remove left-side cab mounting bracket.

Continued on next page



LV306A –UN–03MAR92

A—Traction Clutch Yoke
B—Cap Screw (6 used)
C—PTO Clutch Yoke
D—Shoe (4 used)
E—Guide
F—Cap Screw (3 used)
G—Bearing
H—Traction Clutch Shaft
I—Seal
J—Bearing
K—Snap Ring
L—Traction Clutch Armshaft
M—PTO Clutch Armshaft
N—Bushing (4 used)

10. Remove parts (A—M).

NOTE: Bearing (G) and bushings (N) are press fit. Remove only if replacement is necessary. Bearing (J) is slip fit.

Replace bearing (G) using a press.

Replace bushings (N) using a bushing, bearing, and seal driver set. Install bushings flush with clutch housing.

11. Inspect parts for wear or damage. Replace as necessary.

Continued on next page

NOTE: Clean and lube bushings (N) and armshafts (M and L).

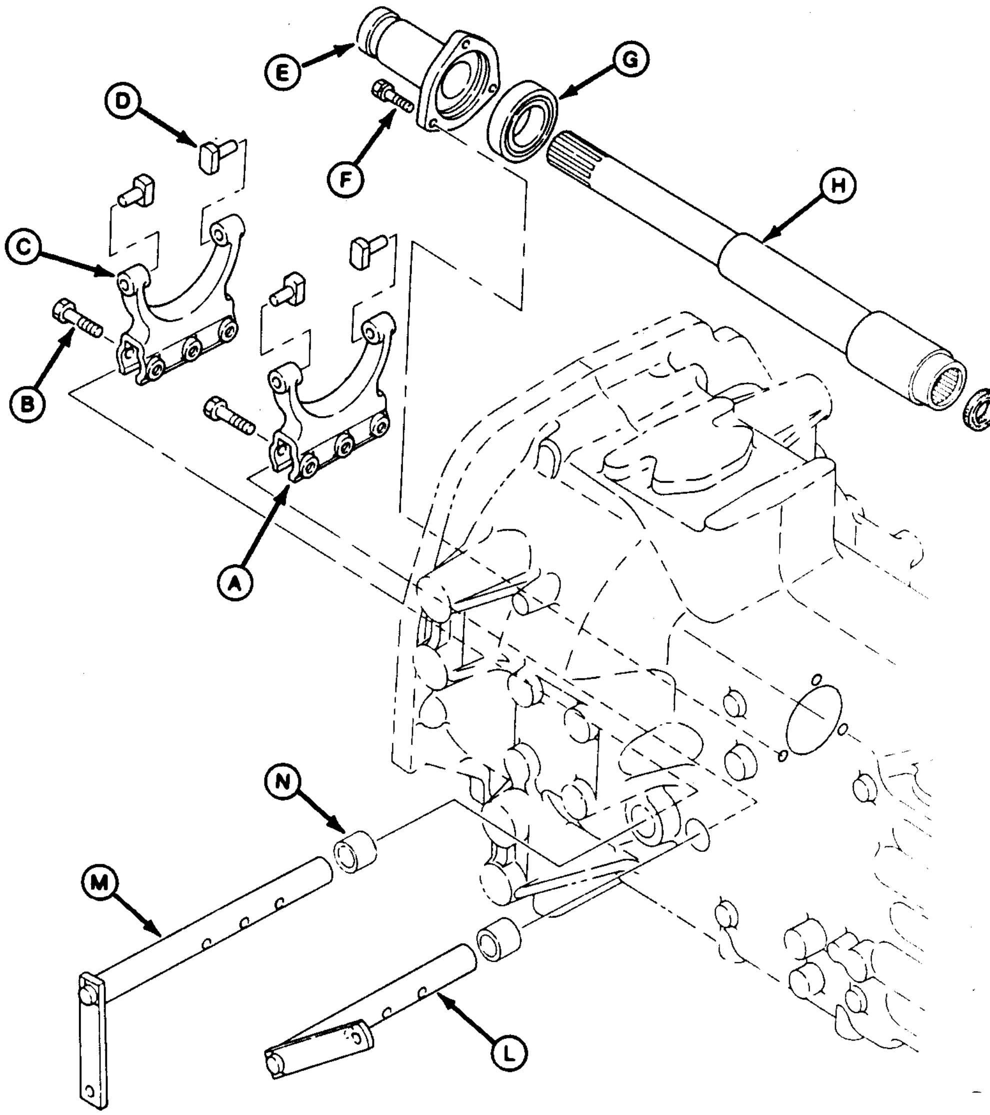
Clean and lube shoes (D).

IMPORTANT: Replace all seals. Damaged or used seals will leak.

12. Pry out seal (I). Install seal into shaft bore with lips facing toward the rear of clutch housing, until it stops, using a bushing, bearing, and seal driver set.

JG31785,00000EB –19–12OCT04–5/5

Install Clutch Release Mechanism and Shafts



A—Traction Clutch Yoke
B—Cap Screw (6 used)
C—PTO Clutch Yoke
D—Shoe (4 used)
E—Guide
F—Cap Screw (3 used)
G—Bearing
H—Traction Clutch Shaft
I—Seal
J—Bearing
K—Snap Ring
L—Traction Clutch Armshaft
M—PTO Clutch Armshaft
N—Bushing (4 used)

1. Apply multipurpose grease to inside lips of seal (I).
2. Apply Moly High Temperature Ep Grease to armshafts (L and M), shoes (D), shaft end of guide (E) and splined ends of shaft (H).
3. Clean cap screws (B) and yoke threads (A and C) thoroughly with Cure Primer. Apply Thread Lock and Sealer (Medium Strength) to cap screw threads.
4. Install parts (A—M).

Continued on next page

5. Tighten cap screws (B) to specification.

Specification

Clutch Yoke Cap Screw—

Torque.. 65 N•m (48 lb-ft)

6. Apply Moly High Temperature Ep Grease to sliding surfaces of clutch release bearing assembly (B).

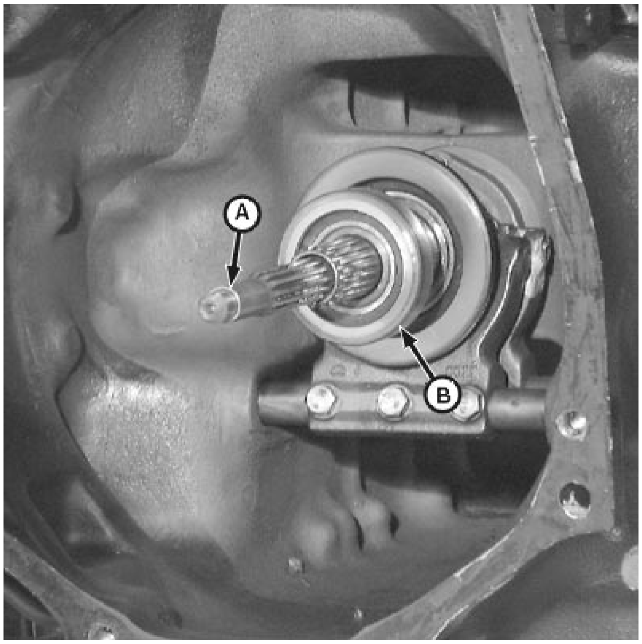
7. Install clutch release bearing assembly (B).

8. Install PTO clutch shaft; rotate shaft as necessary until spines align.

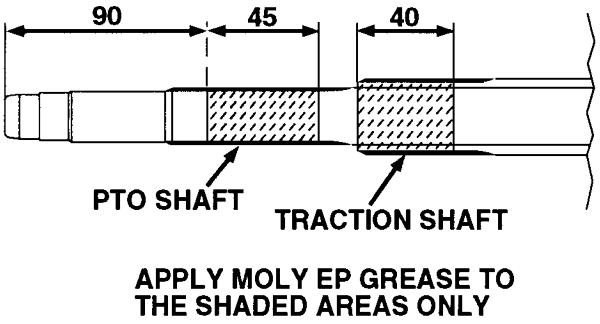
NOTE: Opposite end of PTO shaft must align with a coupler.

9. Apply moly high temperature EP grease to splined ends of PTO and traction clutch shafts as shown.

A—PTO Clutch Shaft
B—Clutch Release Bearing Assembly



LV6643 –UN–10APR01



LV1188AE –19–25JAN95

Continued on next page

10. Connect PTO clutch rod (C) and traction clutch rod (A).

11. Connect brake line (B).

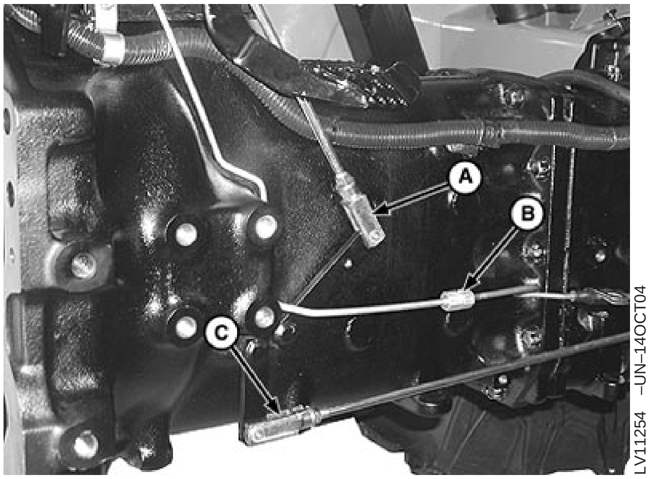
12. Straddle mount tractors: Install left step plate.

13. Cab tractors: Install left-side cab mounting bracket and remove floor jack.

14. Isolated open operator station and cab tractors: Install fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

15. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

16. Adjust traction clutch pedal and PTO lever free play. (See Reference 251-15-001, Checking and Adjusting Clutch Pedal Free Play in TM2197 Section 251, Group 15 andReference 256-15-003, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)



A—Traction Clutch Rod
B—Brake Line
C—PTO Clutch Rod

JG31785,00000EC –19–12OCT04–4/4

Group 11
Clutch Assembly—POWRREVERSER™ Transmission

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

OUO1082,00002D8 –19–01OCT04–1/2

Clutch Finger Height Gauge JDG1384

Measures PTO clutch finger height.

OUO1082,00002D8 –19–01OCT04–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,00002D9 –19–01OCT04–1/2

Bushing, Bearing, and Seal Driver Set

Used to replace bushings of armshafts.

OUO1082,00002D9 –19–01OCT04–2/2

Other Material

Number	Name	Use
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to PTO and traction clutch armshafts, clutch yoke shoes and clutch release bearing guide.
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cleans parts and speeds cure of sealant on traction clutch yoke-to-armshaft cap screw threads.
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to PTO and traction clutch yoke-to-armshaft cap screw threads.

LOCTITE is a trademark of Loctite Corp.

OUO1082,00002DA –19–01OCT04–1/1

Specifications

Item	Measurement	Specification
Clutch-to-Flywheel Cap Screw	Torque	36 N•m (27 lb-ft)
Single Stage Clutch Pressure Plate	Minimum Thickness	16.2 mm (0.638 in.)
Single Stage Clutch Disk	Minimum Thickness	6.6 mm (0.260 in.)
Clutch Release Mechanism Cap Screw	Torque	26 N•m (20 lb-ft)
PTO Clutch Release Shaft Cap Screw	Torque	65 N•m (48 lb-ft)
Transmission Pump Cap Screw	Torque	26 N•m (20 lb-ft)

OUO1082,00002DB –19–01OCT04–1/1

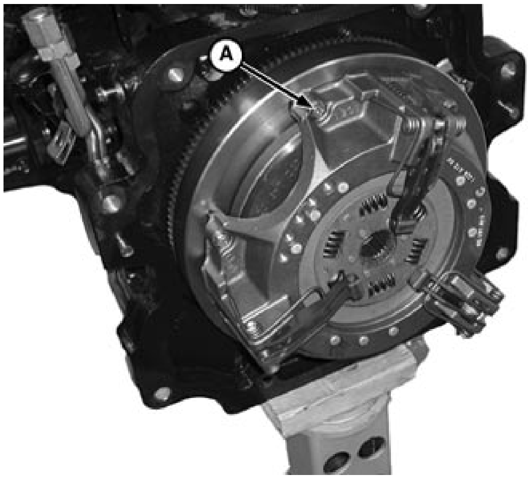
Service Parts Kits

The following kits are available through your parts catalog:

PTO Clutch Lever Kit

OUO6083,00084D1 –19–11OCT04–1/1

Remove and Install Clutch Assembly



LV10965 –UN–07OCT04

A—Cap Screw (6 used)

NOTE: POWRREVERSER™ transmissions, with Electro-Hydraulic PTO, will use a torsional damper as a clutch. Removal and installation of a damper clutch is the same as a standard clutch.

Clutch assembly can be removed and installed without any alignment or finger adjustment procedures.

1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

⚠ **CAUTION: Clutch assembly is heavy. Support clutch before removing cap screws to prevent personal injury.**

2. Remove six cap screws (A) and clutch assembly.

NOTE: Torsional damper clutchs are non-servicable; replace damper clutch if repairs are necessary. No adjustments are needed to installed damper clutch.

If clutch assembly has been disassembled for inspection or repair, see PTO Clutch Finger Adjustment in Section 50, Group 11.

3. Make repairs as necessary. (See procedures in Section 50, Group 11.)

4. Install clutch assembly and cap screws (A). Evenly tighten cap screws in a criss-cross pattern to specification.

Specification

Clutch-to-Flywheel Cap Screw—	
Torque	36 N•m (27 lb-ft)

Continued on next page

POWRREVERSER is a trademark of Deere & Company

5. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

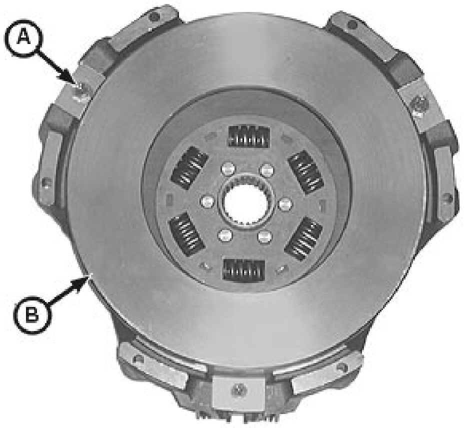
OUO1082,00002DD –19–01OCT04–2/2

Disassemble and Inspect Clutch Assembly

1. Remove lock nuts (A) and discard.

2. Remove pressure plate (B) and inspect for wear or damage. Machine drive surfaces of pressure plate, if necessary, until surface is free of scores, cracks, and heat discoloration.

A—Lock Nut (3 used)
B—Pressure Plate



LV6927 –UN–04JUN01

OUO1082,00002DE –19–01OCT04–1/5

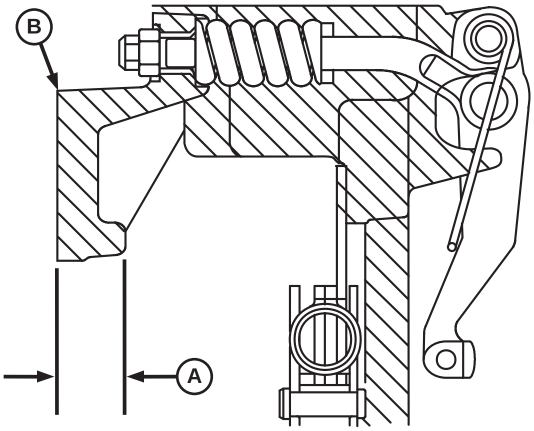
3. Measure thickness of pressure plate at dimension (A). Replace pressure plate if not within specification.

Specification	
Single Stage Clutch Pressure Plate—Minimum Thickness	16.2 mm (0.638 in.)

4. Measure thickness of clutch disk. Replace disk if not within specification.

Specification	
Single Stage Clutch Disk—Minimum Thickness	6.6 mm (0.260 in.)

A—Pressure Plate Thickness
B—Pressure Plate



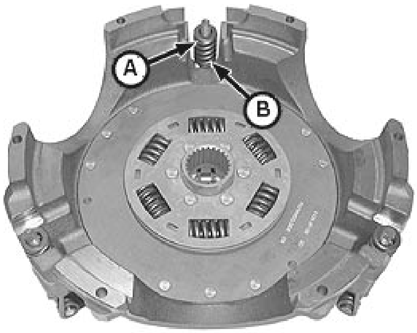
LV6928 –UN–04JUN01

Continued on next page

OUO1082,00002DE –19–01OCT04–2/5

5. Remove springs (A) and washers (B).

A—Spring (3 used)
B—Washer (3 used)



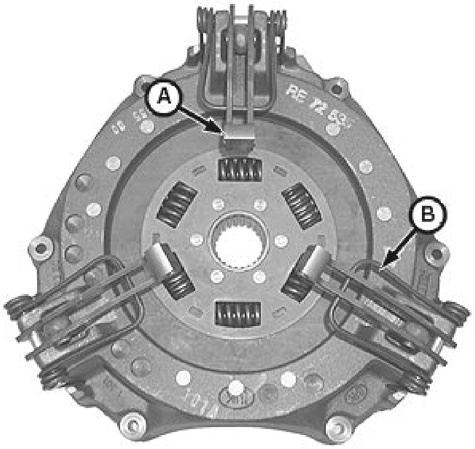
LV6929 –UN–04JUN01

OUO1082,00002DE –19–01OCT04–3/5

6. Inspect clutch fingers (A) for wear. Replace clutch fingers if required.

7. Remove springs (B).

A—Clutch Finger (3 used)
B—Spring (3 used)



LV6930 –UN–04JUN01

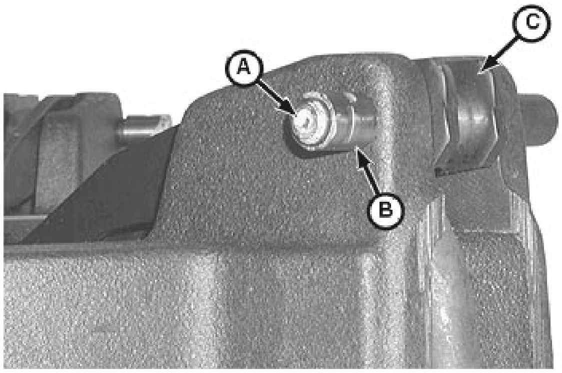
OUO1082,00002DE –19–01OCT04–4/5

8. Drive pin (A) through retaining sleeve (B) and remove clutch finger (C).

9. Discard retaining sleeve (B).

10. Inspect pin and clutch finger bushing for wear. Replace if required.

A—Pin (3 used)
B—Retaining Sleeve (3 used)
C—Clutch Finger (3 used)



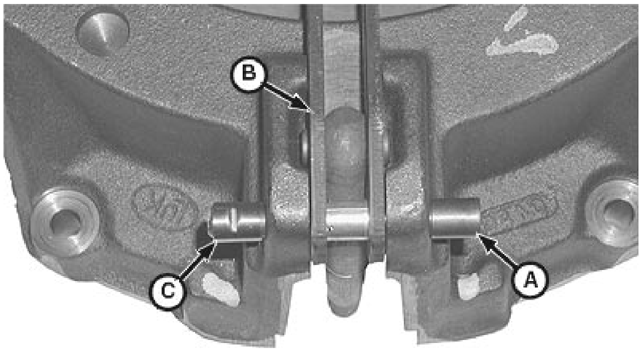
LV6931 –UN–04JUN01

OUO1082,00002DE –19–01OCT04–5/5

Assemble Clutch Assembly

1. Install pin (A) through clutch finger (B). Finger must pivot freely on pin.
2. Install a new retaining sleeve (C) over pin.
3. Using a blunt chisel, notch sleeve into pin groove at two places, 180 degrees apart.

A—Pin (3 used)
B—Clutch Finger (3 used)
C—Retaining Sleeve (3 used)

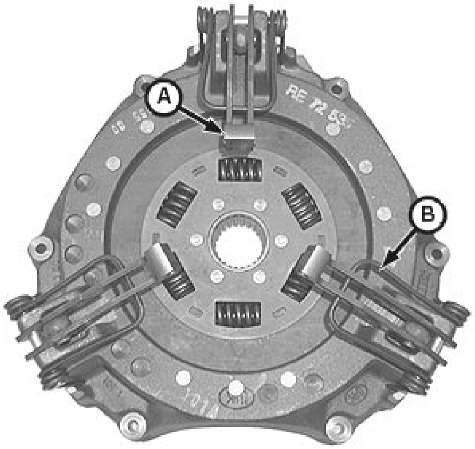


LV6932 –UN–04JUN01

OUO1082,00002DF –19–01OCT04–1/4

4. Install spring (B) under finger (A) and onto pins.

A—Clutch Finger (3 used)
B—Spring (3 used)

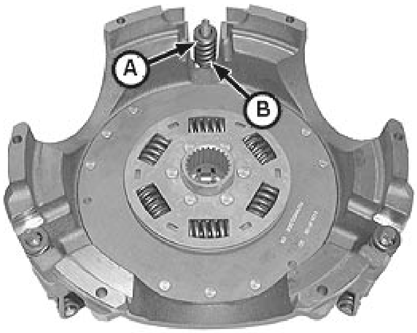


LV6930 –UN–04JUN01

OUO1082,00002DF –19–01OCT04–2/4

5. Install washers (B) onto adjusters.
6. Install springs on top of washers (B).

A—Spring (3 used)
B—Washer (3 used)



LV6929 –UN–04JUN01

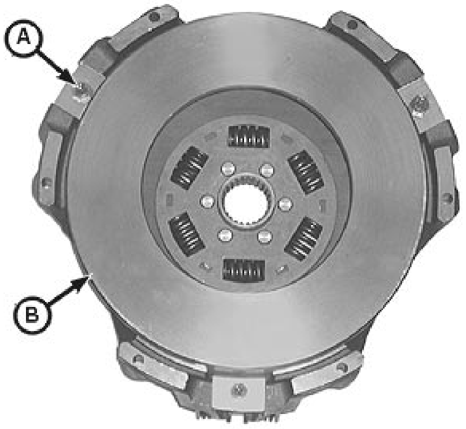
Continued on next page

OUO1082,00002DF –19–01OCT04–3/4

7. Install pressure plate (B) onto adjusters.

8. Install new lock nuts (A). Leave nuts loose.

9. Perform PTO clutch finger adjustment. (See PTO Clutch Finger Adjustment in Section 50, Group 11.)



LV6927 –UN–04JUN01

A—Lock Nuts (3 used)
B—Pressure Plate

OUO1082,00002DF –19–01OCT04–4/4

PTO Clutch Finger Adjustment

1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

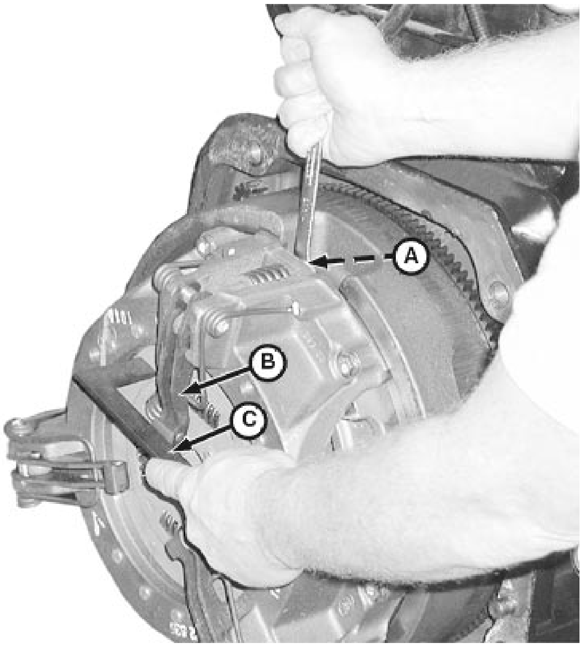
2. Check distance (height) (D) from traction disk (E) to PTO clutch finger (B) using JDG1384 Clutch Finger Height Gauge (C).

3. Turn special nut (A) in or out until clutch finger touches gauge.

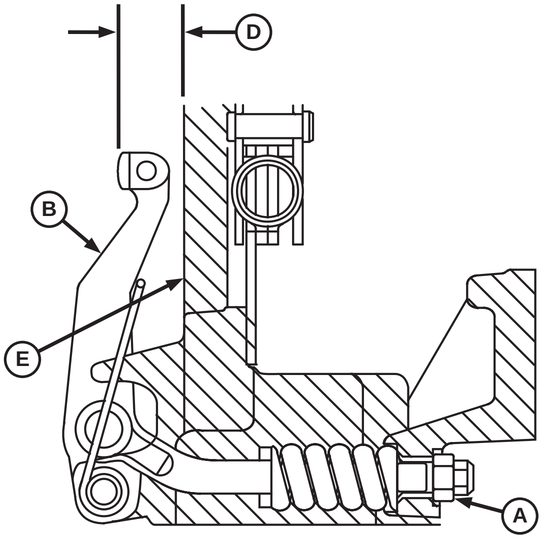
4. Using pliers, crimp the top of special nut to flats on finger adjusting rod.

5. Repeat procedure for two remaining fingers.

6. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)



LV7016 –UN–24MAY01



LV7192 –UN–13JUN01

A—Special Nut
B—PTO Clutch Finger
C—JD1384 Clutch Finger Height Gauge
D—Distance
E—Traction Disk

OUO1082,00002E0 –19–01OCT04–1/1

Remove and Inspect Clutch Release Mechanism and Shafts

NOTE: Tractor without cab shown.

1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

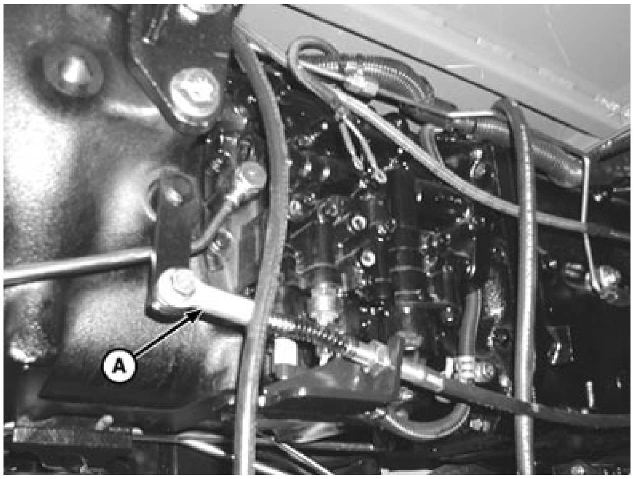
2. Straddle mount tractors: Remove left-side step and plate.

3. Isolated open operator station and cab tractors: Remove fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

NOTE: Cab tractors: Place a floor jack under left side of cab floor to support cab during removal of left-side cab mounting bracket.

4. Tractors with cab: Install floor jack and remove left-side cab mounting bracket.

5. Disconnect PTO clutch cable (A).



LV10966 –UN–07OCT04

A—PTO Clutch Cable

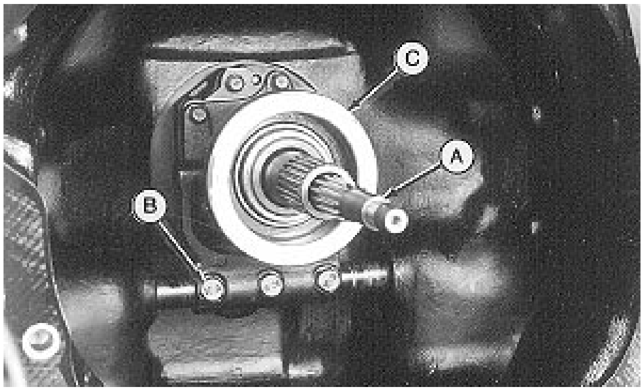
OUO6083,00084D3 –19–11OCT04–1/4

6. Remove PTO clutch shaft (A).

7. Remove cap screws (B).

8. Remove clutch release bearing assembly (C).

A—PTO Clutch Shaft
B—Cap Screw (3 used)
C—Clutch Release Bearing Assembly



LV1054 –UN–15DEC94

Continued on next page

OUO6083,00084D3 –19–11OCT04–2/4

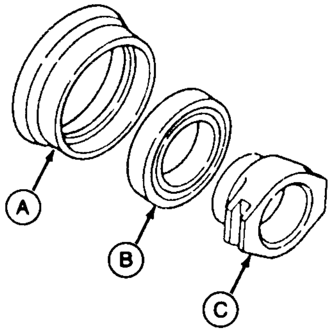
9. Inspect parts (A—C) for wear or damage. Replace as necessary.

NOTE: Collar (A) and bearing (B) are press fit.

Remove collar and bearing only if replacement is necessary.

Disassemble parts (A—C) using a knife-edged puller and a press.

10. Assemble parts using a press.



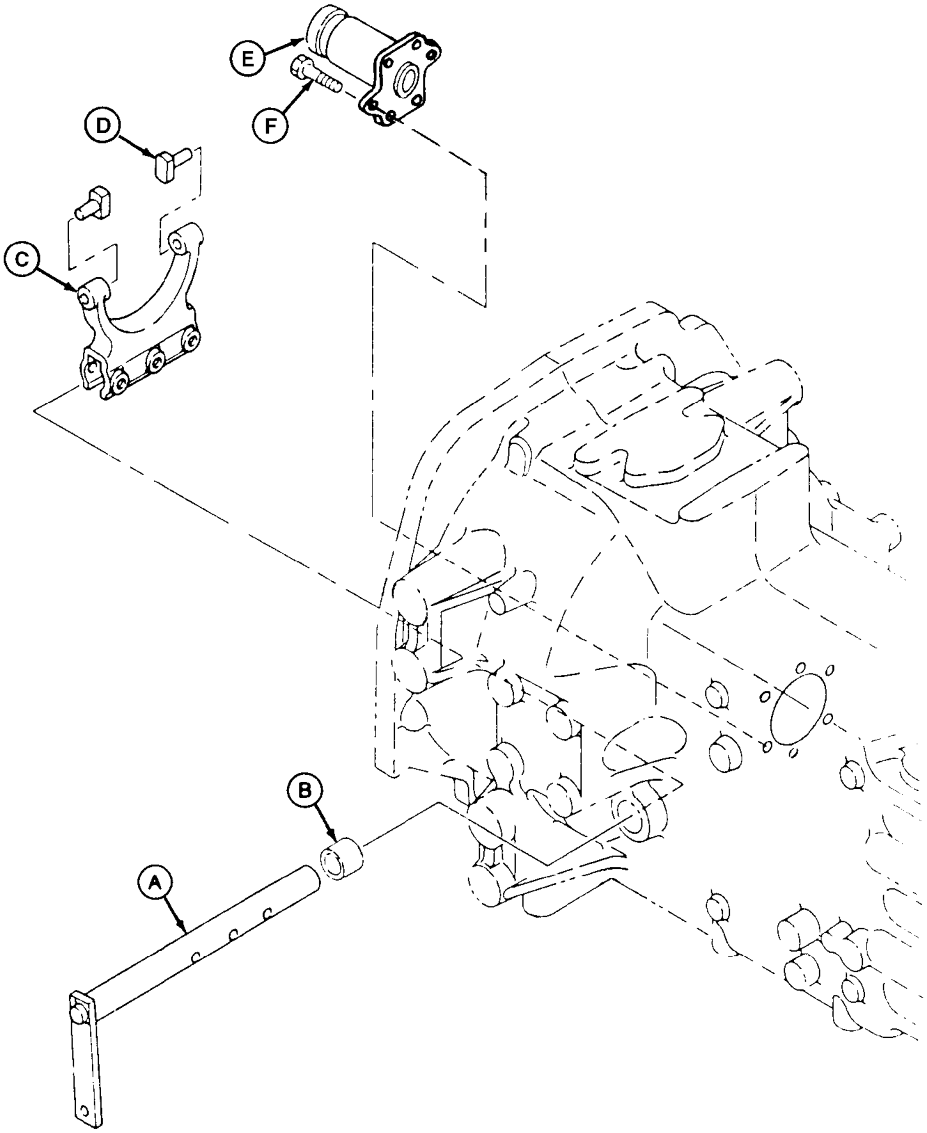
LV1057A –UN–15DEC94

Clutch Release Bearing Assembly

A—PTO Clutch Collar
B—Bearing
C—PTO Clutch Sleeve

Continued on next page

OUO6083,00084D3 –19–11OCT04–3/4



LV11245 –UN–12OCT04

A—PTO Clutch Armshaft
B—Bushing (2 used)
C—PTO Clutch Yoke
D—Shoe (2 used)
E—Guide
F—Cap Screw (6 used)

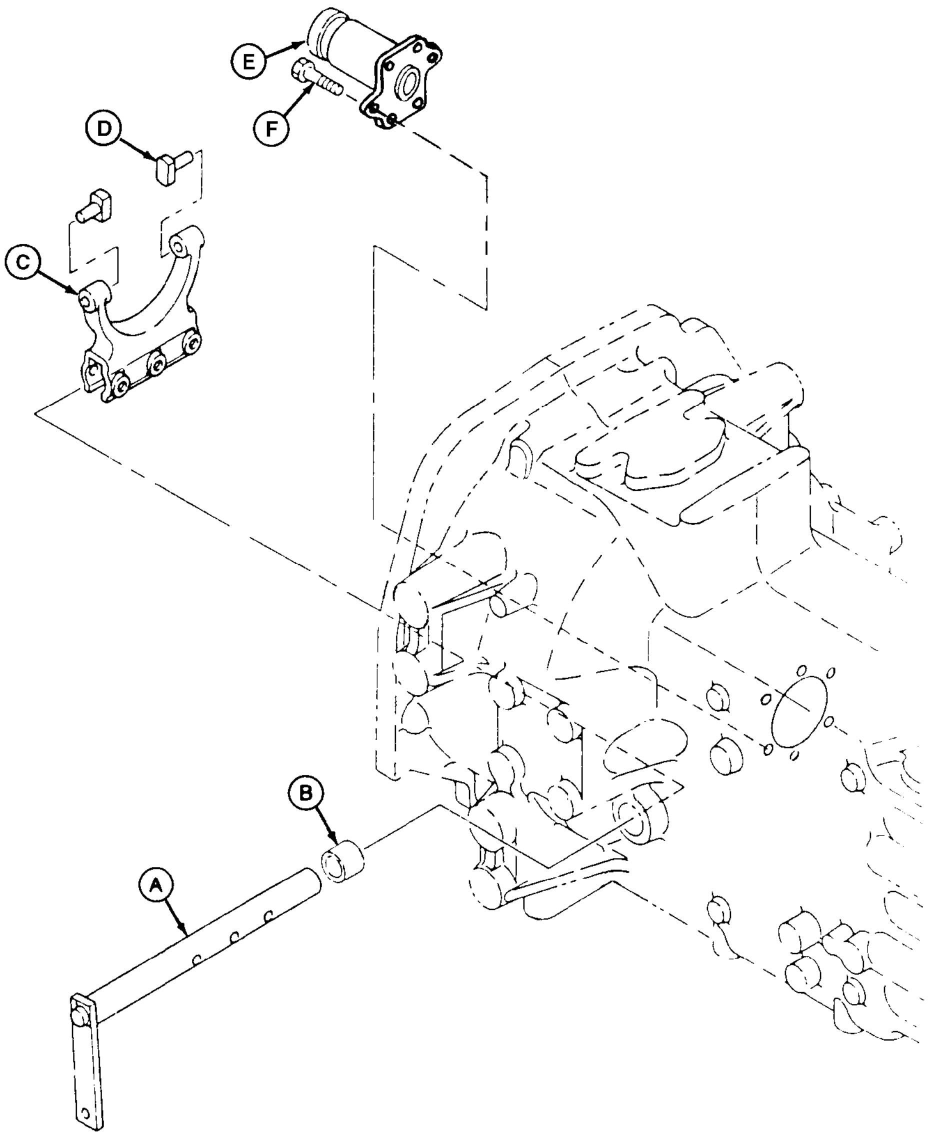
11. Remove parts (A—F).

NOTE: Bushings (B) are press fit. Remove only if replacement is necessary.

12. Replace bushings (B) using a bushing, bearing, and seal driver set. Install bushings flush with clutch housing.

13. Inspect parts for wear or damage. Replace as necessary.

Install Clutch Release Mechanism and Shafts



A—PTO Clutch Armshaft
B—Bushing (2 used)
C—PTO Clutch Yoke
D—Shoe (2 used)
E—Guide
F—Cap Screw (6 used)

1. Apply Moly High Temperature EP Grease to armshafts (A), shoes (D), and shaft end of guide (E).

2. Install parts (A—F). Tighten cap screws (F) to specification.

Specification	
Clutch Release Mechanism Cap Screw—Torque	26 N•m (20 lb-ft)

Continued on next page

3. Apply Moly High Temperature EP Grease to sliding surfaces of PTO clutch release bearing assembly (C).

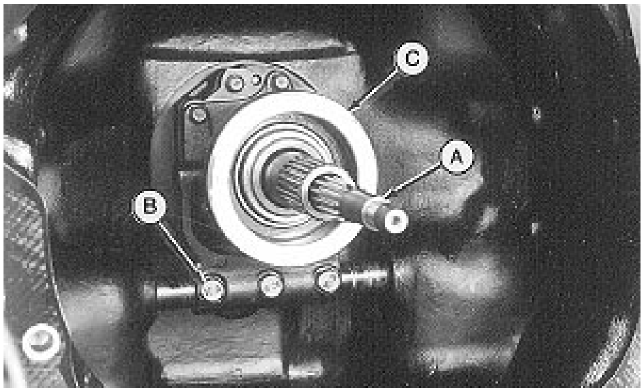
4. Install clutch release bearing assembly.

5. Clean cap screws (B) and yoke threads thoroughly with Cure Primer. Apply Thread Lock and Sealer (Medium Strength) to cap screw threads.

6. Tighten cap screws (B) to specification.

Specification

PTO Clutch Release Shaft Cap Screw—Torque.. 65 N•m (48 lb-ft)

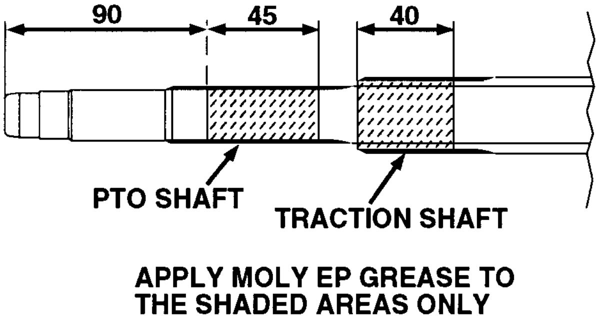


LV1054 –UN–15DEC94

7. Apply Moly High Temperature EP Grease to splined ends of PTO and traction clutch shafts as shown.

NOTE: Opposite end of clutch shaft must align with a coupler.

8. Install PTO clutch shaft (A). Rotate shaft as necessary until fully seated.



LV1188AE –19–25JAN95

A—PTO Clutch Shaft
B—Cap Screw (3 used)
C—PTO Clutch Release Bearing Assembly

Continued on next page

OUO6083,00084D4 –19–11OCT04–2/3

9. Connect PTO clutch cable (A).

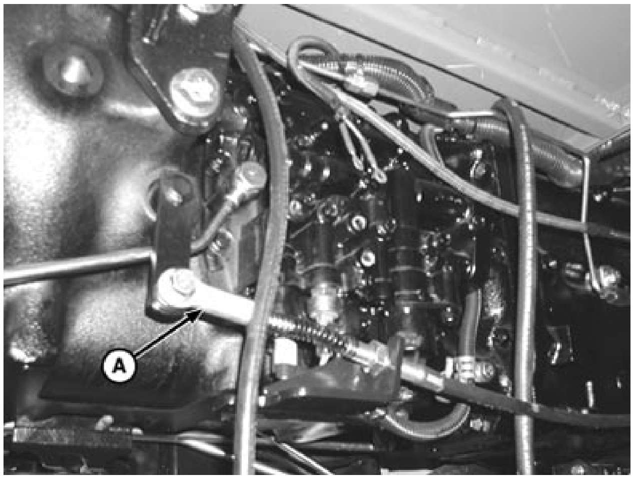
10. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)

11. Adjust PTO clutch lever linkage. (See Reference 256-15-003, PTO Clutch Lever Linkage Adjustment-Straddle Mount or Reference 256-15-004, PTO Clutch Lever Linkage Adjustment-Isolated Open Operator Station and Cab Tractors (Without Electro-Hydraulic PTO) in TM2197 Section 256, Group 15.)

12. Straddle Mount Tractors: Install left-side platform.

13. Tractors With Cab: Install left-side cab mounting bracket and remove floor jack.

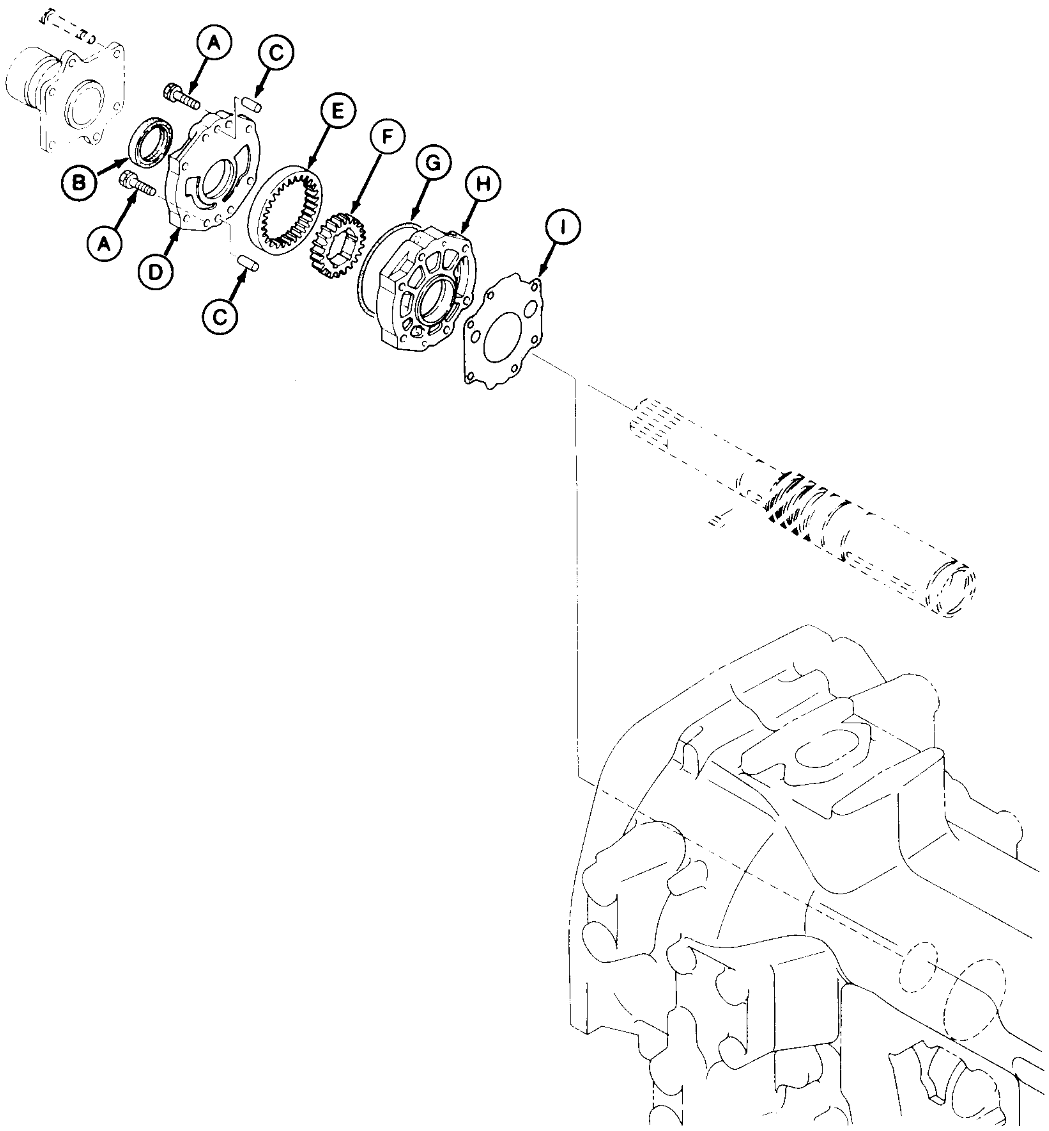
14. Isolated open operator station and cab tractors: Install fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)



A—PTO Clutch Cable

OUO6083,00084D4 –19–11OCT04–3/3

Remove, Inspect, and Repair Transmission Pump



A—Cap Screw (2 used)
B—Seal
C—Pin (2 used)
D—Pump Cover
E—Drive Gear
F—Pump Gear
G—O-Ring
H—Pump Housing
I—Gasket

NOTE: POWRREVERSER™ transmission pump shown. POWRREVERSER transmission with Electro-Hydraulic Hi/Lo is similar.

1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing—Straddle Mount or Separate Engine from Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 05.)
2. Remove clutch release mechanism and shafts. (See Remove and Inspect Clutch Release Mechanism and Shafts in Section 50, Group 11.)

POWRREVERSER is a trademark of Deere & Company

Continued on next page

3. Remove parts (A—I).

4. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Remove seal (B) only if replacement is necessary.

5. Inspect seal (B) for wear or damage. Replace if necessary.

6. Pry out seal (B).

7. Replace seal (B) using a bearing, bushing, and seal driver set. Install until seated.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

8. Install parts (A—I) and tighten cap screws (A) to specification.

Specification

Transmission Pump Cap Screw—Torque .... 26 N•m (20 lb-ft)

9. Install clutch release mechanism and shafts.

10. Install engine to clutch housing. (See Install Engine to Clutch Housing—Straddle Mount or Install Engine to Clutch Housing—Isolated Open Operator Station and Cab Tractors in Section 50, Group 06.)

OUO1082,00002E3 –19–01OCT04–2/2

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

OUO1082,0000343 –19–01DEC04–1/2

Special Tool. JDT24B

Disassembles clutch piston.

OUO1082,0000343 –19–01DEC04–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,0000344 –19–01DEC04–1/2

Lifting Brackets. JDG19

Used to remove and install engine.

Lifting Brackets. JT01748

Used to remove and install engine.

OUO1082,0000344 –19–01DEC04–2/2

Other Material

Number	**Name**	**Use**
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to splined ends of PTO and clutch shafts. Apply to splines of PTO shaft coupler.

OUO1082,0000345 –19–01DEC04–1/1

Specifications

Item	Measurement	Specification
Control Valve Cap Screw	Torque	26 N•m (20 lb-ft)
Hydraulic Line-to-Control Valve	Torque	30 N•m (22 lb-ft)
M22 Hydraulic Banjo Fitting	Torque	118 N•m (87 lb-ft)
M18 Hydraulic Banjo Fitting	Torque	74 N•m (54 lb-ft)
M14 Hydraulic Banjo Fitting	Torque	44 N•m (32 lb-ft)
Plate-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)
Front Cover-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)
Engine/Flywheel Housing-to-Clutch Housing Cap Screw (4-Cylinder)	Torque	260 N•m (192 lb-ft)
Clutch Housing-to-Engine M20 Cap Screw (4-Cylinder)	Torque	430 N•m (317 lb-ft)
Mid-Plate-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)
Rear Plate-to-Clutch Housing Cap Screw	Torque	26 N•m (20 lb-ft)
Lo Clutch Springs	Height	6.1 mm (0.240 in.)
Hi/Lo Clutch Disk	Minimum Thickness	2.04 mm (0.080 in.)
Hi/Lo Clutch Plate	Minimum Thickness	1.37 mm (0.054 in.)
Hi/Lo Clutch End Plate	Minimum Thickness	3.00 mm (0.118 in.)
Lo Clutch Outer Pin Plate	Minimum Thickness	4.30 mm (0.169 in.)
Hi Clutch Spring	Minimum Height	48.6 mm (1.913 in.)
Lo Clutch Cover Screws	Torque	9.8 N•m (87 lb-in.)
PR Clutch Disk	Minimum Thickness	2.7 mm (0.106 in.)

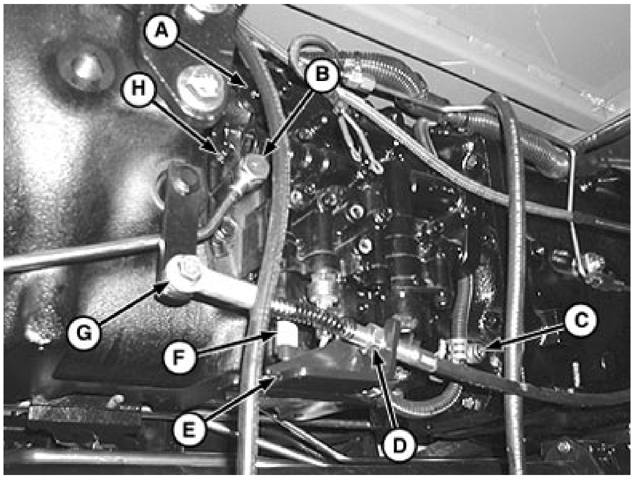
Continued on next page

JG31785,0000417 –19–25FEB05–1/2

Item	Measurement	Specification
PR Clutch End Plate	Minimum Thickness	5.85 mm (0.230 in.)
PR Clutch Plate	Minimum Thickness	3.85 mm (0.151 in.)

JG31785,0000417 –19–25FEB05–2/2

Remove and Install POWRREVERSER™ Control Valve



A—Inlet Strainer
B—Hydraulic Line
C—Cap Screw
D—Cable Nut
E—Cable Bracket
F—Connector (4 used)
G—PTO Cable End
H—Cap Screw (20 used)

1. Straddle mount tractors: Remove left-side step.

2. Isolated open operator station and cab tractors: Remove fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

3. Drain hydraulic fluid from transmission.

4. POWRREVERSER transmissions with EH Hi/Lo: Remove shield from bottom of valve.

5. POWRREVERSER transmissions: Disconnect PTO cable end (G).

6. POWRREVERSER transmissions: Loosen cable nut (D) and move cable away from valve.

7. POWRREVERSER transmissions: Remove cable bracket (E).

8. Disconnect hydraulic line (B).

9. Disconnect harness connectors (F) from solenoids.

10. Remove cap screw (C) and move harness away from valve.

11. Remove plug with O-ring, spring and inlet strainer (A).

NOTE: On POWRREVERSER transmissions with EH Hi/Lo: POWRREVERSER valve is equipped with three transfer tubes between valve and clutch housing. Do not lower valve until transfer tubes have fully disengaged from valve.

12. Remove cap screws (H) and control valve.

POWRREVERSER is a trademark of Deere & Company

Continued on next page

NOTE: Tag or lable location of transfer tubes for ease of installation

13. On POWRREVERSER transmissions with EH Hi/Lo: Remove transfer tubes.

14. Make repairs as necessary. (See Disassemble, Inspect, and Repair POWRREVERSER Control Valve in Section 50, Group 12.)

15. Clean mating surfaces of control valve and clutch housing.

16. Install new gasket (B).

NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

Transfer tubes use two sizes of O-rings. Install larger O-ring on shouldered end of transfer tube.

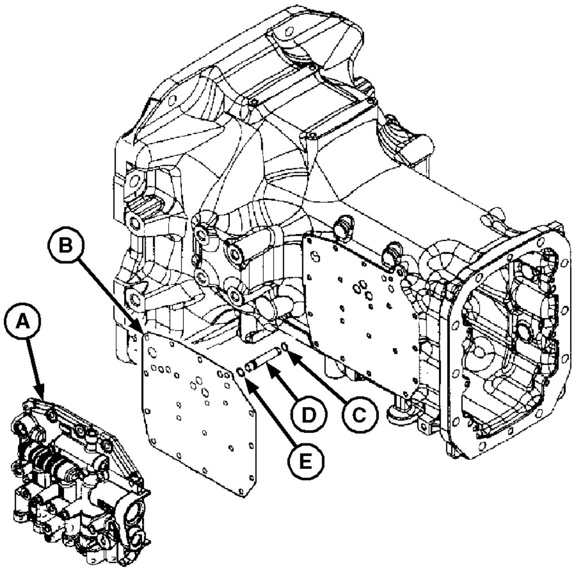
17. On POWRREVERSER transmissions with EH Hi/Lo: Install new O-rings (E and C) on transfer tubes (D).

NOTE: Transfer tubes MUST be installed with shouldered end facing control valve.

18. On POWRREVERSER transmissions with EH Hi/Lo: Install transfer tubes (D) into clutch housing, shouldered end out towards control valve.

NOTE: On POWRREVERSER transmissions with EH Hi/Lo: Be sure transfer tubes align with holes in valve when installing control valve.

19. Install control valve (A) to clutch housing.



LV11702 –UN–22NOV04

A—Control Valve
B—Gasket
C—O-Ring (3 used)
D—Transfer Tube (3 used)
E—O-Ring (3 used)

Continued on next page

OUO1082,0000335 –19–15NOV04–2/3

20. Install cap screws (H). Tighten cap screws to specification.

Specification

Control Valve Cap Screw—
Torque .... 26 N•m (20 lb-ft)

21. Install inlet strainer (A), spring and plug with O-ring.

22. Install harness and clamp with cap screw (C).

23. Connect harness connectors (F) to solenoids.

24. Connect hydraulic line (B). Tighten to specification.

Specification

Hydraulic Line-to-Control Valve—
Torque .... 30 N•m (22 lb-ft)

25. POWRREVERSER transmissions: Install cable bracket (E).

26. POWRREVERSER transmissions: Install cable and cable nut (D).

27. POWRREVERSER transmissions: Connect PTO cable end (G).

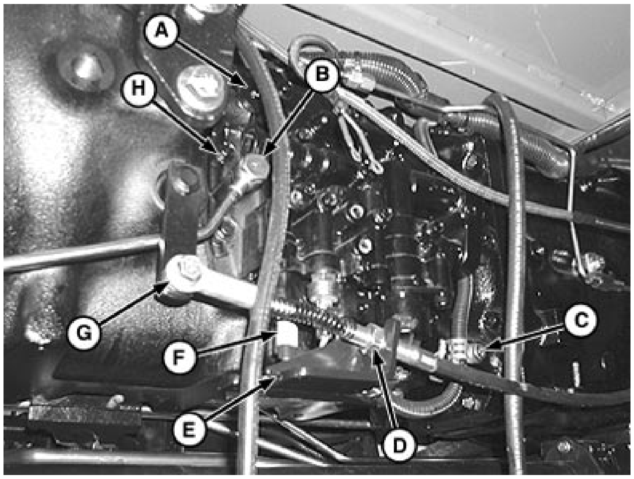
28. POWRREVERSER transmissions with EH Hi/Lo: Install shield to bottom of valve.

29. Fill hydraulic fluid to proper level.

30. Straddle mount tractors: Install left-side step.

31. Isolated open operator station and cab tractors: Install fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

32. Pressure test control valve to check operation. Perform Reference 255-15-001, POWRREVERSER Control Valve Tests in TM2197 Section 255, Group 15.

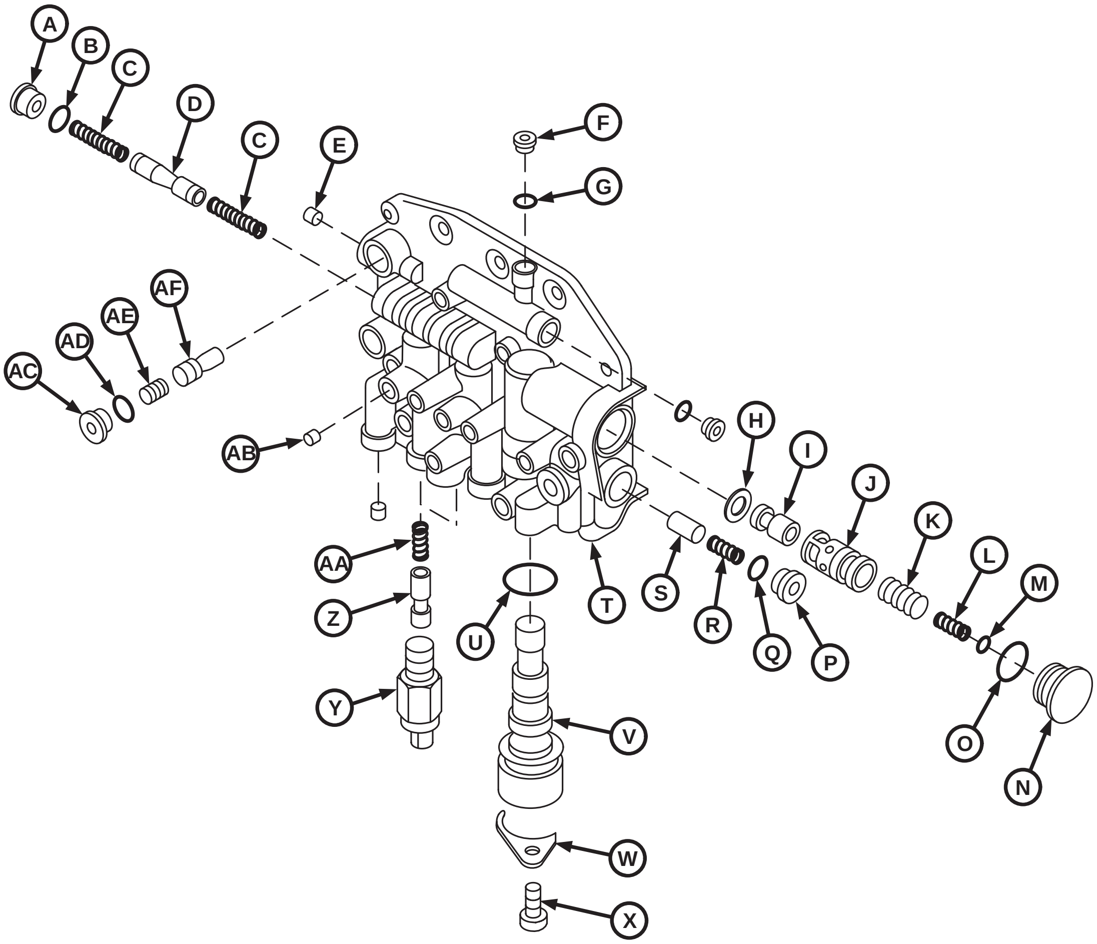


LV11697 –UN–09DEC04

A—Inlet Strainer
B—Hydraulic Line
C—Cap Screw
D—Cable Nut
E—Cable Bracket
F—Connector (4 used)
G—PTO Cable End
H—Cap Screw (20 used)

OUO1082,0000335 –19–15NOV04–3/3

Disassemble, Inspect, and Repair POWRREVERSER™ Control Valve


A
B
C
D
C
E
F
G
AF
AE
AD
AC
AB
H
I
J
K
L
M
AA
Z
U
T
S
R
Q
P
Y
V
O
N
W
X

LV11843 –UN–02DEC04

POWRREVERSER is a trademark of Deere & Company

Continued on next page

A—Plug
B—O-Ring
C—Spring (2 used)
D—Piston
E—Plug
F—Plug (2 used)
G—Seal (2 used)
H—Spacer
I—Piston
J—Sleeve
K—Outer Spring
L—Inner Spring
M—Shim
N—Plug
O—O-Ring
P—Plug
Q—O-Ring
R—Spring
S—Piston
T—Valve Housing
U—O-Ring
V—Solenoid Valve
W—Retainer
X—Socket Head Cap Screw
Y—Solenoid Valve (2 used)
Z—Spool (2 used)
AA—Spring (2 used)
AB—Plug (8 used)
AC—Plug
AD—O-Ring
AE—Spring
AF—Inlet Strainer

1. Remove POWRREVERSER control valve. (See Remove and Install POWRREVERSER Control Valve in Section 50, Group 12.)

2. Remove parts (A—D) to remove shuttle valve.

NOTE: *Shims (M) may have different thicknesses. Record thickness of shim stack for ease of reassembly.*

3. Remove parts (H—O) to remove main relief valve.

4. Remove parts (P—S) to remove lubrication relief valve.

5. Remove parts (U—X) to remove enable proportional valve.

6. Remove parts (Y—AA) to remove forward and reverse solenoid valves.

7. Remove plugs and seals (F and G).

8. Remove plugs (AB).

9. Clean and inspect parts (AC—AF), disassembled during removal of control valve. Replace if necessary.

10. Clean and inspect all parts and valve housing (T). Replace if necessary.

IMPORTANT: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

NOTE: *Lubricate all internal parts with clean transmission/hydraulic oil during assembly.*

11. Install plugs (AB).

12. Install plugs and seals (F and G).

13. Install parts (Y—AA) for forward and reverse solenoid valves.

14. Install parts (U—X) for enable proportional valve.

15. Install parts (P—S) for lubrication relief valve.

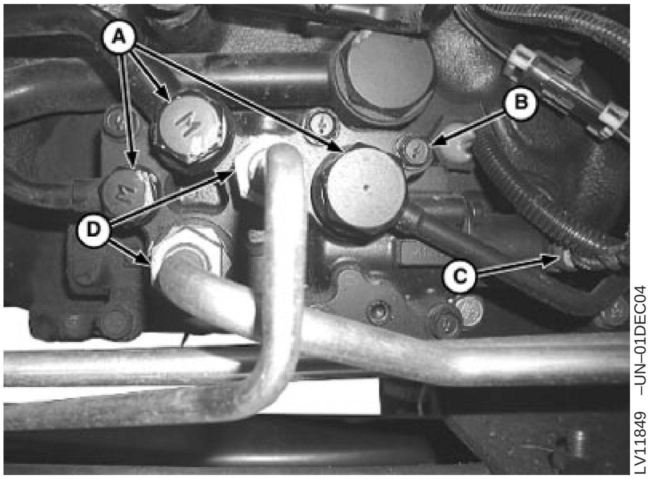
NOTE: *Shims (M) must be installed to thickness recorded at disassembly.*

16. Install parts (H—O) for main relief valve.

17. Install parts (A—D) for shuttle valve.

18. Install POWRREVERSER control valve. (See Remove and Install POWRREVERSER Control Valve in Section 50, Group 12.)

Remove and Install EH Hi/Lo Valve



A—Hydraulic Line Banjo Fitting
B—Cap Screw (6 used)
C—Connector
D—Hydraulic Line Nuts

NOTE: Hydraulic lines may vary depending on options tractor is equipped with.

1. Disconnect hydraulic line banjo fittings (A) and nuts (D).

2. Disconnect harness connector (C).

3. Remove six cap screws (B).

NOTE: Valve is equipped with two transfer tubes between valve and clutch housing. Do not lower valve until transfer tubes have fully disengaged from valve.

4. Remove Hi/Lo valve.

NOTE: Tag or lable location of transfer tubes for ease of installation.

5. Remove transfer tubes.

6. Make repairs as necessary. (See Disassemble, Inspect, and Repair EH Hi/Lo Valve in Section 50, Group 12.)

7. Clean mating surfaces of control valve and clutch housing.

8. Install new gasket.

NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

9. Install new O-rings on transfer tubes.

10. Install transfer tubes into clutch housing.

NOTE: Be sure transfer tubes align with holes in valve when installing control valve.

11. Install control valve to clutch housing.

12. Install cap screws (B). Tighten cap screws to specification.

Continued on next page

Specification

Control Valve Cap Screw—
Torque .... 26 N•m (20 lb-ft)

OUO1082,000033E –19–17NOV04–2/3

---

13. Install hydraulic line banjo fittings (A) and tighten to specification.

Specification

M22 Hydraulic Banjo Fitting—
Torque .... 118 N•m (87 lb-ft)

Specification

M18 Hydraulic Banjo Fitting—
Torque .... 74 N•m (54 lb-ft)

Specification

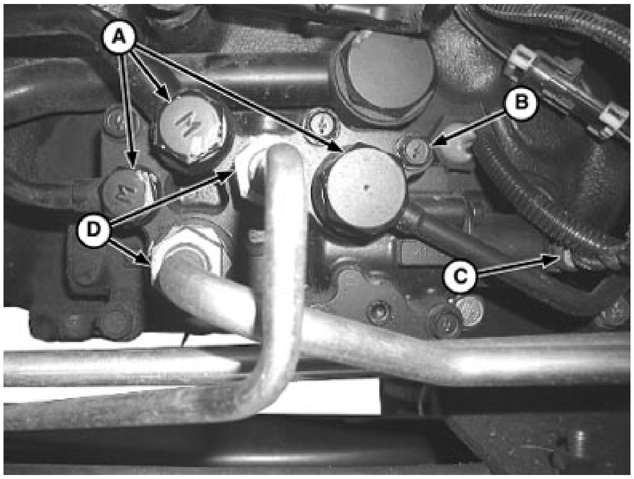
M14 Hydraulic Banjo Fitting—
Torque .... 44 N•m (32 lb-ft)

NOTE: Hydraulic lines may vary depending on options tractor is equipped with.

14. Connect hydraulic line nuts (D), if equipped.

15. Connect harness connector (C) to solenoid.

16. Fill hydraulic fluid to proper level.

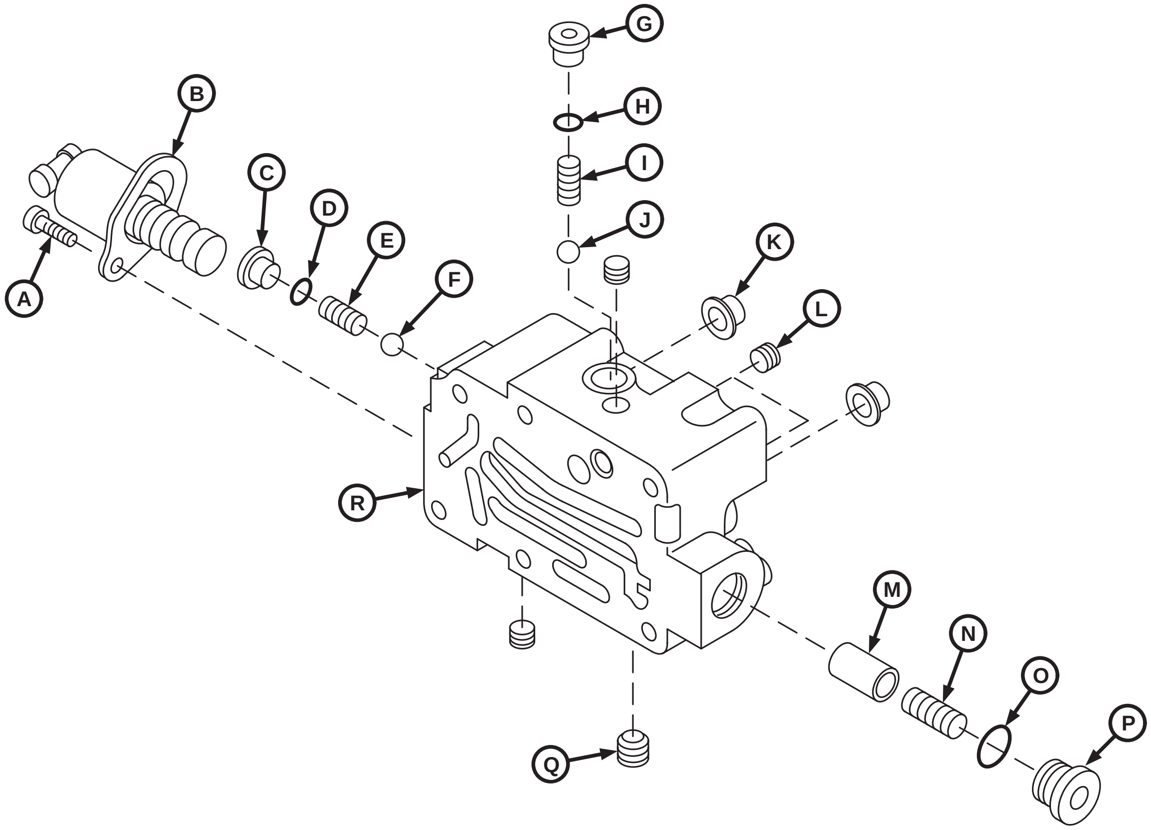


LV11849 –UN–01DEC04

A—Hydraulic Line Banjo Fitting
B—Cap Screw (6 used)
C—Connector
D—Hydraulic Line Nut

OUO1082,000033E –19–17NOV04–3/3

Disassemble, Inspect, and Repair EH Hi/Lo Valve



LV11844 –UN–02DEC04

Continued on next page

A—Socket Head Cap Screw (2 used)
B—Solenoid Valve
C—Plug
D—O-Ring
E—Spring
F—Ball
G—Plug
H—O-Ring
I—Spring
J—Ball
K—Inlet Strainer (2 used)
L—Plug (5 used)
M—Piston
N—Spring
O—O-Ring
P—Plug
Q—Plug
R—Housing

1. Remove EH Hi/Lo valve. (See Remove and Install EH Hi/Lo Valve in Section 50, Group 12.)

2. Remove socket head cap screws (A) and remove solenoid valve (B).

3. Remove parts (C—F).

NOTE: All EH Hi/Lo valves contain a MFWD check valve, even if tractor is not equipped with MFWD.

4. Remove parts (G—J) to remove MFWD check valve.

5. Remove parts (M—P) to remove lubrication relief valve.

NOTE: Inlet strainers (K) will be damaged and must be replaced if removed.

6. Clean and check inlet strainers (K). Remove and replace only if necessary.

7. Remove plugs (L and Q).

8. Clean and inspect valve housing (R). Replace if necessary.

IMPORTANT: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

9. Install new inlet strainers (K), if removed.

10. Install plugs (L and Q).

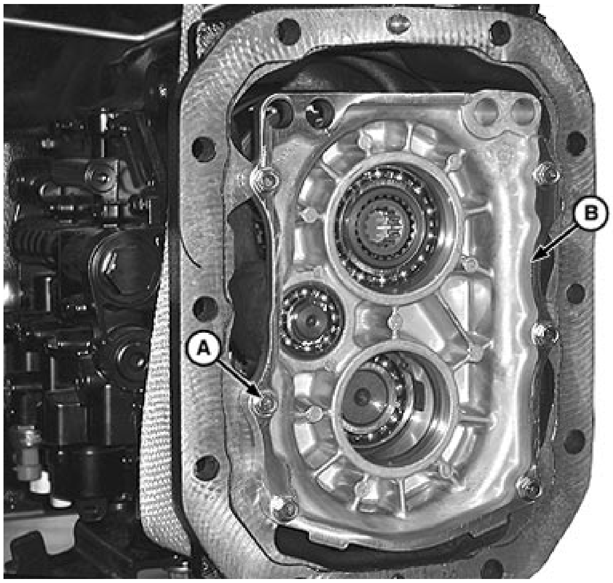
11. Install valve parts (C—F, G—J, and M—P).

12. Install solenoid valve (B) using socket head cap screws (A).

13. Install EH Hi/Lo valve. (See Remove and Install EH Hi/Lo Valve in Section 50, Group 12.)

OUO1082,0000353 –19–15DEC04–2/2

Remove and Install POWRREVERSER™—Transmissions Without EH Hi/Lo



LV11717 –UN–18NOV04

1. Separate clutch housing from transmission. (See Separate Clutch Housing from Transmission—Straddle Mount or Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)

2. Remove cap screws (A) and plate (B).

3. Disassemble and inspect plate (B). Replace parts as necessary. (See Disassemble, Inspect, and Repair Reverse Idle Gear—Transmissions Without EH Hi/Lo in Section 50, Group 12.)

A—Cap Screw (6 used)
B—Plate

POWRREVERSER is a trademark of Deere & Company

Continued on next page

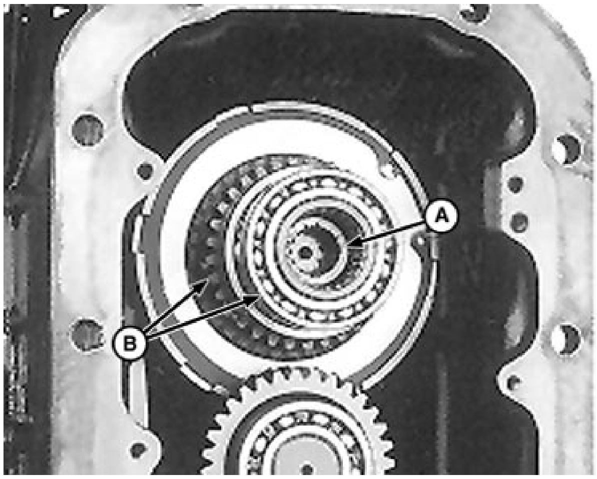
OUO1082,0000337 –19–17NOV04–1/8

4. Remove splined coupling (A).

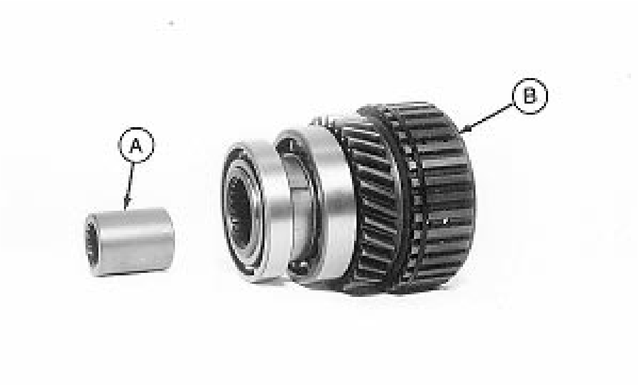
5. Remove clutch gear (B).

6. Disassemble and inspect clutch gear (B). Replace parts as necessary. (See Disassemble, Inspect, and Repair Clutch Gear—Transmissions Without EH Hi/Lo in Section 50, Group 12.)

A—Splined Coupling
B—Clutch Gear



LV11718 –UN–18NOV04



LV1071 –UN–15DEC94

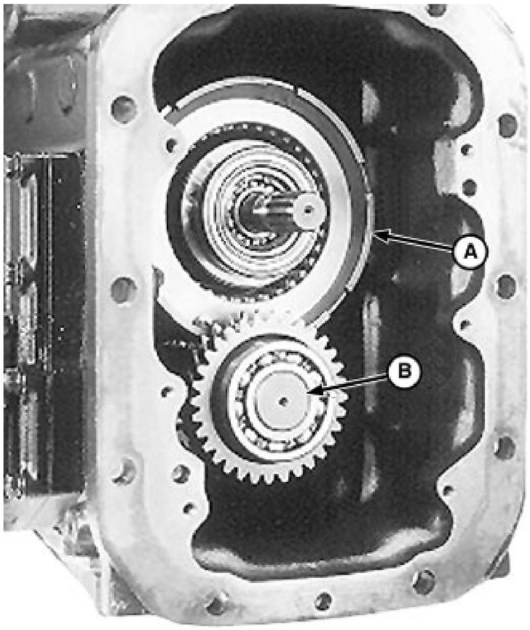
Continued on next page

OUO1082,0000337 –19–17NOV04–2/8

NOTE: Place a mark on the end of driven shaft (B) to aid during installation.

7. Slide POWRREVERSER (A) and driven shaft (B) rearward until driven shaft (B) can be removed.

8. Disassemble and inspect driven shaft (B). Replace parts as necessary. (See Disassemble, Inspect, and Repair Driven Shaft—Transmissions Without EH Hi/Lo in Section 50, Group 12.)



LV11719 –UN–18NOV04

A—POWRREVERSER
B—Driven Shaft

Continued on next page

OUO1082,0000337 –19–17NOV04–3/8

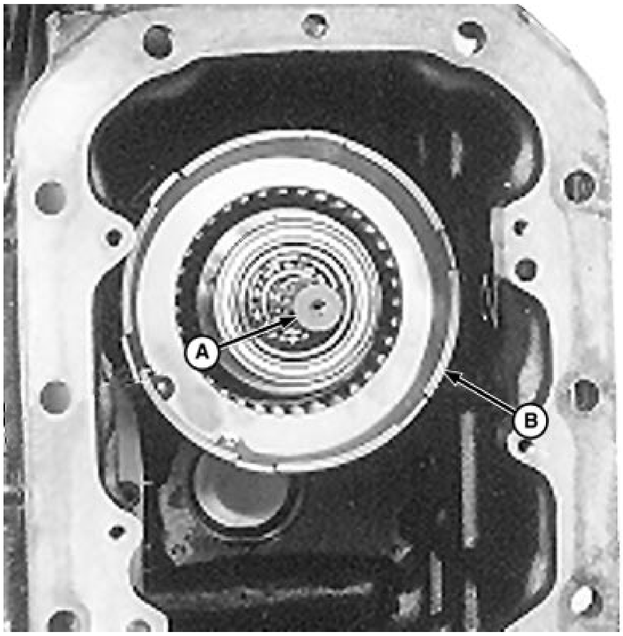
CAUTION: Approximate weight of POWRREVERSER (B) is 20 kg (45 lb).

9. Remove PTO shaft (A).

10. Remove POWRREVERSER (B).

11. Disassemble and inspect POWRREVERSER (B). Replace parts as necessary. (See Disassemble, Inspect, and Repair POWRREVERSER—Transmissions Without EH Hi/Lo in Section 50, Group 12.)

A—PTO Shaft
B—POWRREVERSER



LV11720 –UN–18NOV04

LV1075 –UN–15DEC94

Continued on next page

OUO1082,0000337 –19–17NOV04–4/8

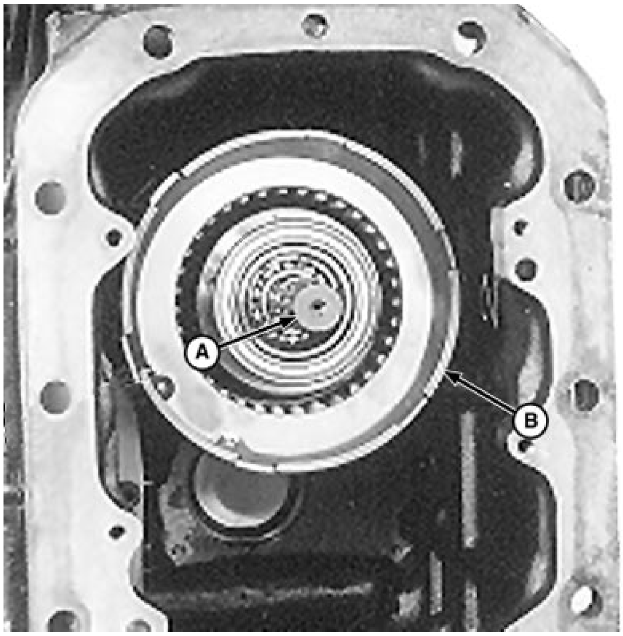
NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

IMPORTANT: Use new seals and O-rings during assembly. Damaged or used seals or O-rings will leak.

12. Apply Moly High Temperature EP Grease to splined ends of PTO and clutch shafts.

13. Install POWRREVERSER (B) and PTO shaft (A). It may be necessary to rotate POWRREVERSER during installation.

A—PTO Shaft
B—POWRREVERSER



LV11720 –UN–18NOV04

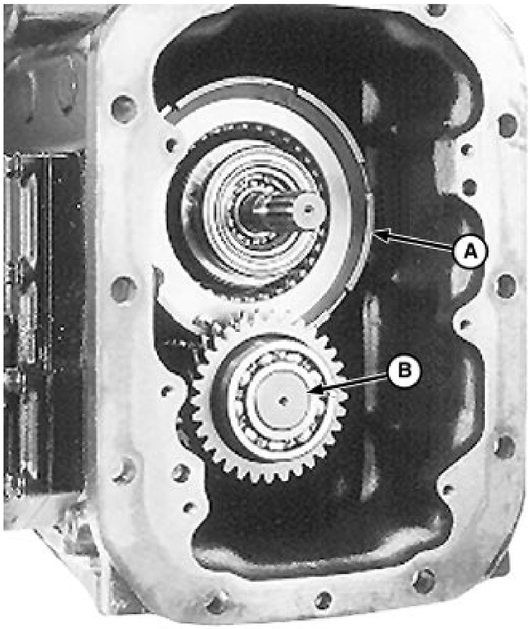
50
12
18

OUO1082,0000337 –19–17NOV04–5/8

NOTE: To aid in installation of driven shaft (B), do not seat POWRREVERSER (A) completely into case bore.

14. Install driven shaft (B) and fully seat POWRREVERSER shaft (A) and driven shaft (B) into case bore.

A—POWRREVERSER
B—Driven Shaft



LV11719 –UN–18NOV04

Continued on next page

OUO1082,0000337 –19–17NOV04–6/8

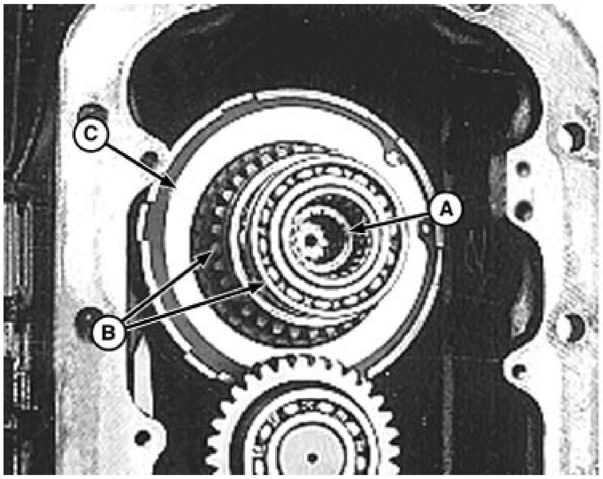
NOTE: During installation of clutch gear (B), rotate clutch gear to align disks onto splined ends of clutch gear. Make sure clutch gear (B) is completely seated inside POWRREVERSER.

15. Install clutch gear (B) until large seal on clutch gear is completely under plate (C).

16. Apply Moly High Temperature EP Grease to inside splines of coupling (A).

17. Install splined coupling (A).

A—Splined Coupling
B—Clutch Gear
C—Plate



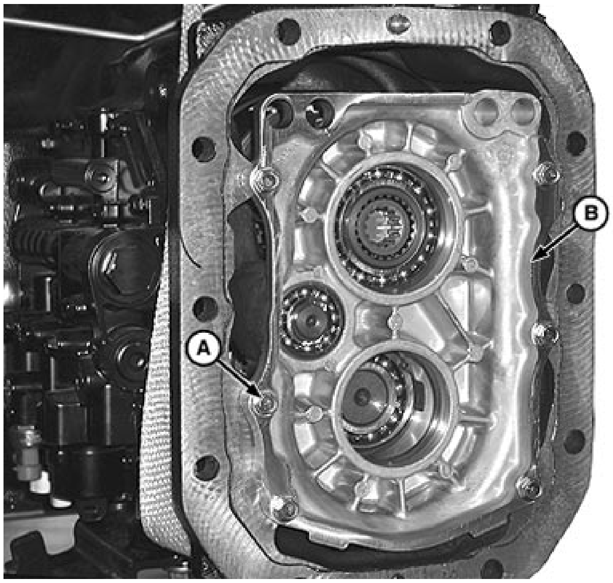
LV11723 –UN–18NOV04

OUO1082,0000337 –19–17NOV04–7/8

18. Install plate (B) and cap screws (A). Tighten cap screws to specification.

Specification	
Plate-to-Clutch Housing Cap Screw—Torque	26 N•m (20 lb-ft)

A—Cap Screw (6 used)
B—Plate



LV11717 –UN–18NOV04

OUO1082,0000337 –19–17NOV04–8/8

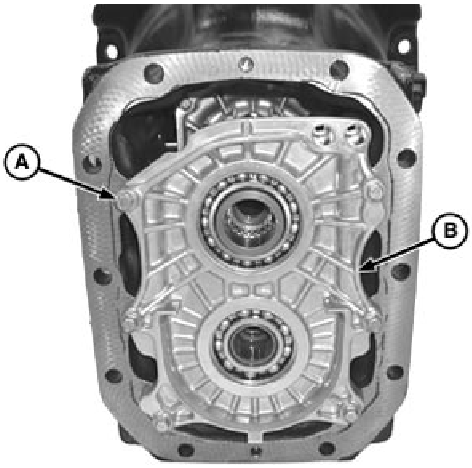
Remove and Install POWRREVERSER™—Transmissions With EH Hi/Lo

1. Separate clutch housing from transmission. (See Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)

2. Remove POWRREVERSER control valve. (See Remove and Install POWRREVERSER Control Valve in Section 50, Group 12.)

3. Remove EH Hi/Lo valve. (See Remove and Install EH Hi/Lo Valve in Section 50, Group 12.)

4. Remove cap screws (A) and rear plate (B).



LV11763 –UN–22NOV04

A—Cap Screw (6 used)
B—Rear Plate

POWRREVERSER is a trademark of Deere & Company

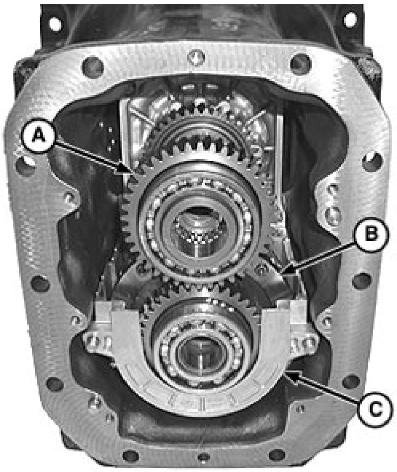
OUO1082,0000338 –19–17NOV04–1/14

5. Remove drive gear (A).

6. Remove Hi/Lo clutch shaft (B) along with oil tray (C).

7. Disassemble and inspect Hi/Lo clutch shaft (B). Replace parts as necessary. (See Disassemble, Inspect, and Repair Hi/Lo Clutch Shaft—Transmissions With EH Hi/Lo in Section 50, Group 12.)

A—Drive Gear
B—Hi/Lo Clutch Shaft
C—Oil Tray

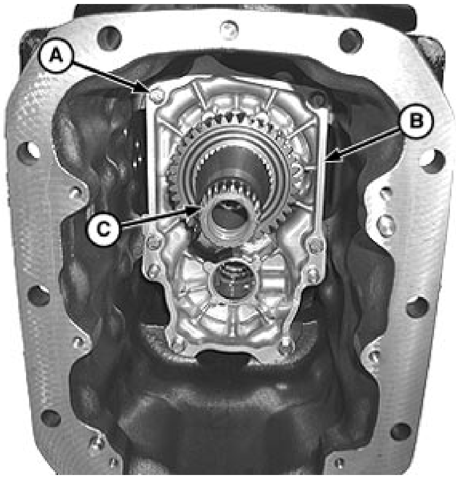


LV11764 –UN–22NOV04

Continued on next page

OUO1082,0000338 –19–17NOV04–2/14

8. Remove connect shaft (C).
9. Disassemble and inspect connect shaft (C). Replace parts as necessary. (See Disassemble, Inspect, and Repair Connect Shaft—Transmissions With EH Hi/Lo in Section 50, Group 12.)
10. Remove cap screws (A) and remove mid-plate (B).



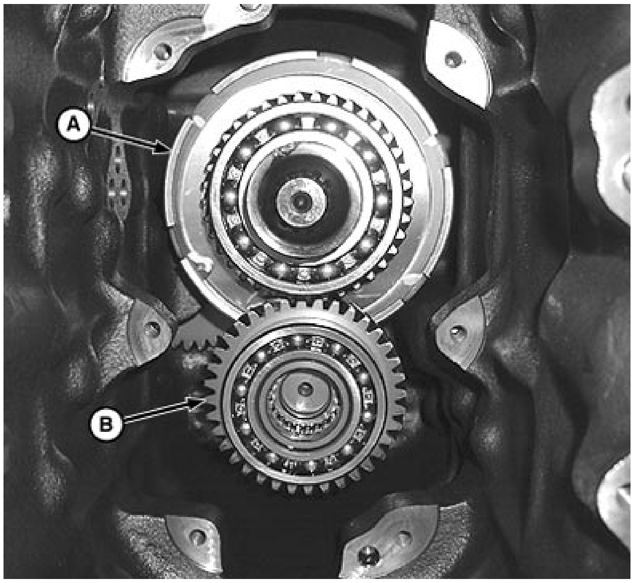
LV11767 –UN–22NOV04

A—Cap Screw (6 used)
B—Mid-Plate
C—Connect Shaft

OUO1082,0000338 –19–17NOV04–3/14

CAUTION: Approximate weight of POWRREVERSER (B) is 20 kg (45 lb).

11. Slide POWRREVERSER (A) and driven shaft (B) rearward until driven shaft (B) can be removed.
12. Remove POWRREVERSER (A).
13. Disassemble and inspect POWRREVERSER (A). Replace parts as necessary. (See Disassemble, Inspect, and Repair POWRREVERSER—Transmissions With EH Hi/Lo in Section 50, Group 12.)
14. Disassemble and inspect driven shaft (B). Replace parts as necessary. (See Disassemble, Inspect, and Repair Driven Shaft—Transmissions With EH Hi/Lo in Section 50, Group 12.)



LV11768 –UN–22NOV04

A—POWRREVERSER
B—Driven Shaft

Continued on next page

OUO1082,0000338 –19–17NOV04–4/14

NOTE: Reverse idle gear must be removed from the front of the clutch housing.

15. Disconnect or move any remaining hydraulic lines connected between clutch housing and engine.

16. Install lifting brackets such as JDG19 or JT01748.

17. Attach a hoist to engine.

18. Install wood blocks between front axle pivot stops and frame.

19. Attach a hoist to clutch housing.

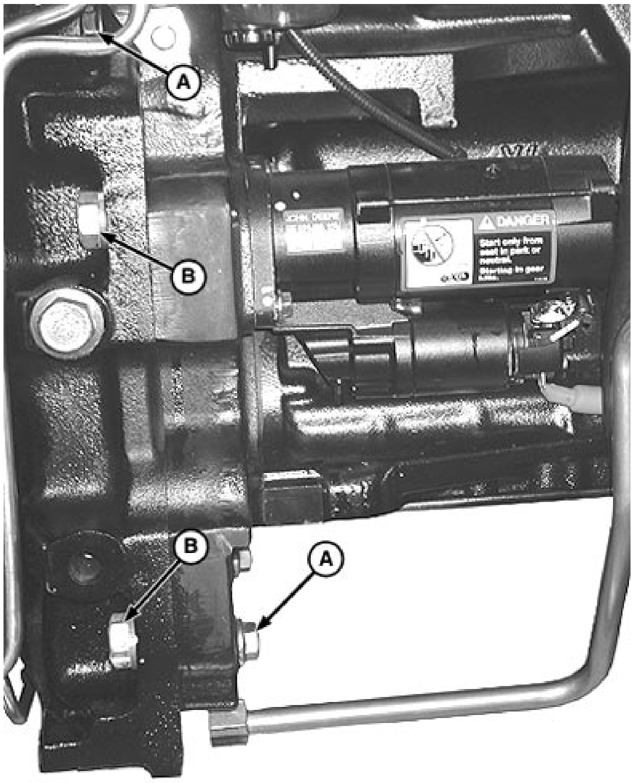
NOTE: 4-cylinder engine shown; 5-cylinder is similar.

20. Remove cap screws (A and B). Repeat this procedure for opposite side of tractor.

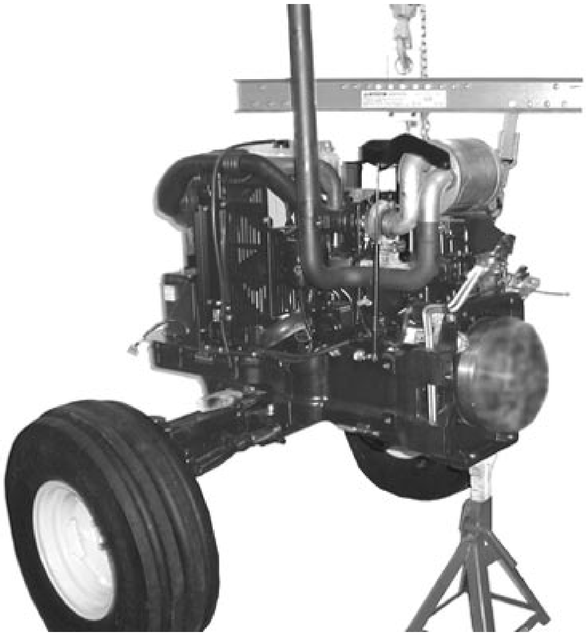
21. Remove clutch housing from front section (engine/front axle assembly).

22. Install a support stand under the flywheel housing of engine.

A—Cap Screw (4 used)
B—Cap Screw (4 used)



LV11793 –UN–24NOV04



LV11794 –UN–24NOV04

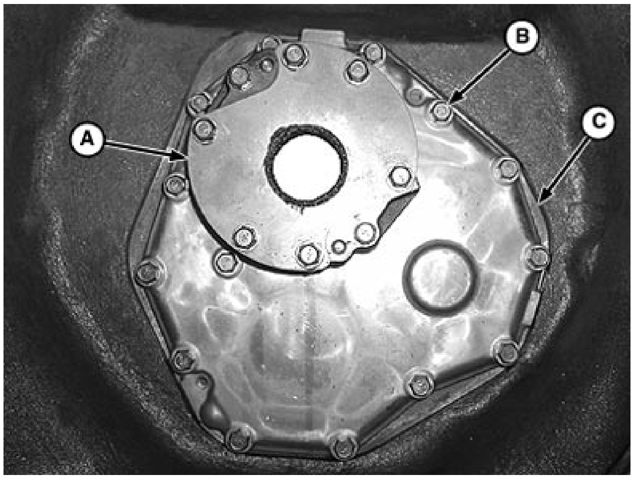
Continued on next page

OUO1082,0000338 –19–17NOV04–5/14

23. Remove transmission pump (A). (See Remove, Inspect, and Repair Transmission Pump in Section 50, Group 11.)

24. Remove cap screws (B) and remove front cover (C).

A—Transmission Pump
B—Cap Screw (14 used)
C—Front Cover



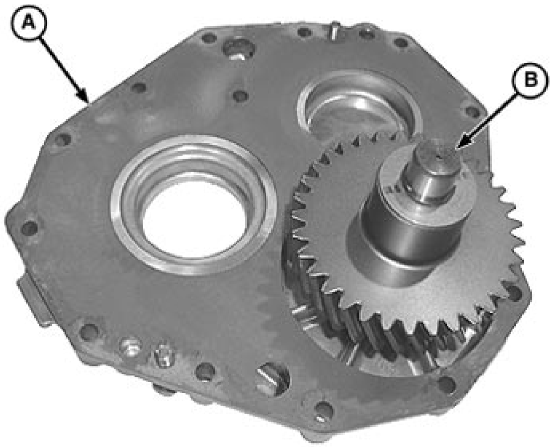
LV11816 –UN–24NOV04

OUO1082,0000338 –19–17NOV04–6/14

NOTE: Reverse idle gear shaft is slip fit in front cover.

25. Remove reverse idle gear assembly (B) from front cover (A). Disassemble and inspect reverse idle gear assembly. Replace parts as necessary. (See Disassemble, Inspect, and Repair Reverse Idle Gear—Transmissions With EH Hi/Lo in Section 50, Group 12.)

A—Front Cover
B—Reverse Idle Gear Assembly



LV11817 –UN–24NOV04

Continued on next page

OUO1082,0000338 –19–17NOV04–7/14

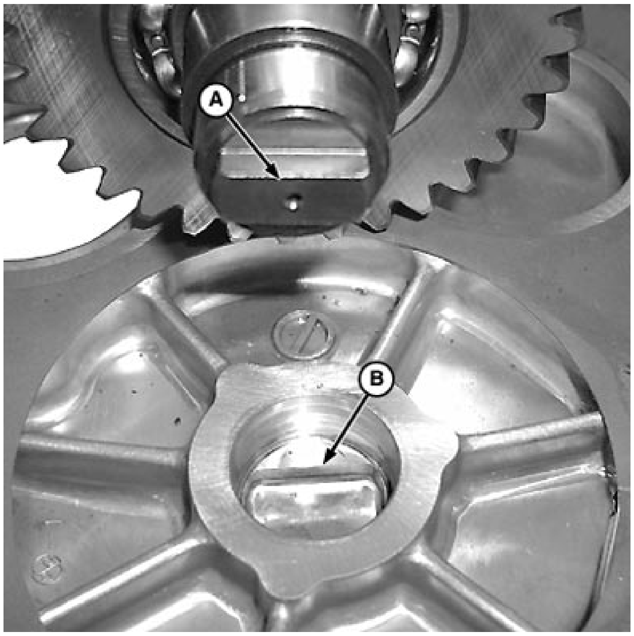
NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

IMPORTANT: Use new seals and O-rings during assembly. Damaged or used seals or O-rings will leak.

26. Clean mating surfaces of front cover and clutch housing.

27. Install new gasket to front cover.

28. With shaft tab (A) aligned with cover slot (B), install reverse idle gear assembly into front cover.



LV11821 –UN–29NOV04

A—Shaft Tab
B—Cover Slot

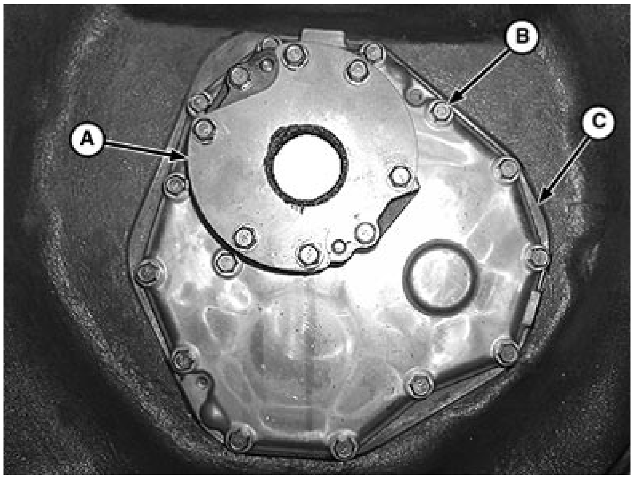
OUO1082,0000338 –19–17NOV04–8/14

29. Install front cover (C) to clutch housing.

30. Install cap screws (B) and tighten to specification.

Specification	
Front Cover-to-Clutch Housing Cap Screw—Torque	26 N•m (20 lb-ft)

31. Install transmission pump (A). (See Remove, Inspect, and Repair Transmission Pump in Section 50, Group 11.)



LV11816 –UN–24NOV04

A—Transmission Pump
B—Cap Screw (14 used)
C—Front Cover

Continued on next page

OUO1082,0000338 –19–17NOV04–9/14

32. Install clutch housing to front section (engine/front axle assembly).

NOTE: 4-cylinder engine shown; 5-cylinder is similar.

33. Install screws (A and B). Repeat for opposite side of tractor. Tighten cap screws to specification.

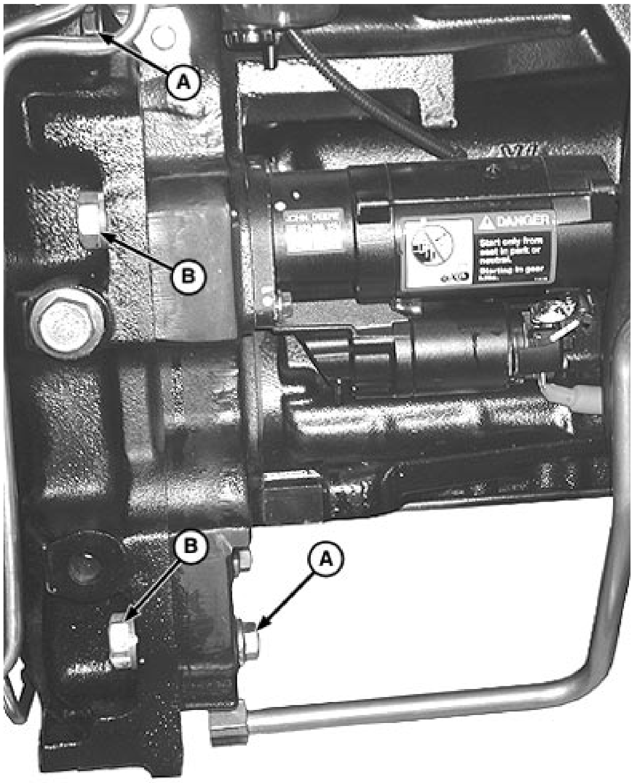
Specification

Engine/Flywheel Housing-to-Clutch Housing Cap Screw (4-Cylinder)—Torque	260 N•m (192 lb-ft)
Clutch Housing-to-Engine M20 Cap Screw (4-Cylinder)—Torque	430 N•m (317 lb-ft)

34. Install a support stand under the clutch housing.

35. Remove hoist from engine and remove lifting brackets.

36. Connect or install any hydraulic lines that were moved to remove clutch housing from engine.



LV11793 –UN–24NOV04

A—Cap Screw (4 used)
B—Cap Screw (4 used)

50
12
25

Continued on next page

OUO1082,0000338 –19–17NOV04–10/14

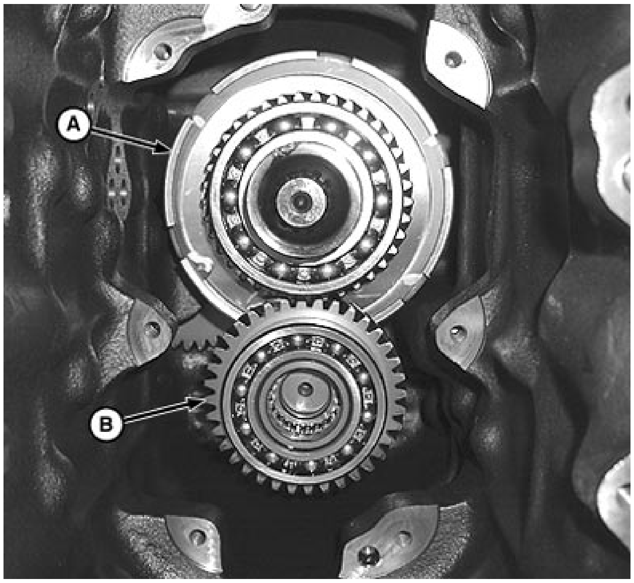
CAUTION: Approximate weight of POWRREVERSER (B) is 20 kg (45 lb).

NOTE: To aid in installation of driven shaft (B), do not seat POWRREVERSER (A) completely into case bore.

37. Install POWRREVERSER (A) into clutch housing. Do not fully seat POWRREVERSER at this time.

38. Install driven shaft (B) and fully seat POWRREVERSER (A) shaft and driven shaft (B) into case bore.

A—POWRREVERSER
B—Driven Shaft



LV11768 –UN–22NOV04

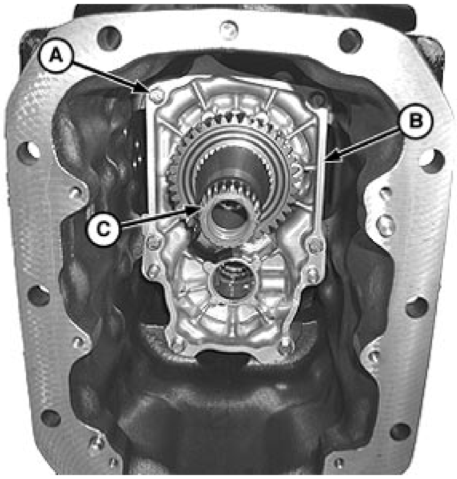
OUO1082,0000338 –19–17NOV04–11/14

39. Install mid-plate (B) and cap screws (A). Tighten cap screws to specification.

Specification	
Mid-Plate-to-Clutch Housing Cap Screw—Torque	26 N•m (20 lb-ft)

40. Install connect shaft (C).

A—Cap Screw (6 used)
B—Mid-Plate
C—Connect Shaft



LV11767 –UN–22NOV04

Continued on next page

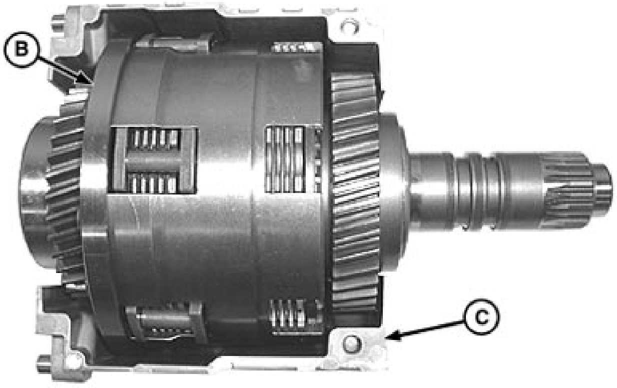
OUO1082,0000338 –19–17NOV04–12/14

41. Place Hi/Lo clutch shaft (B) into oil tray (C).

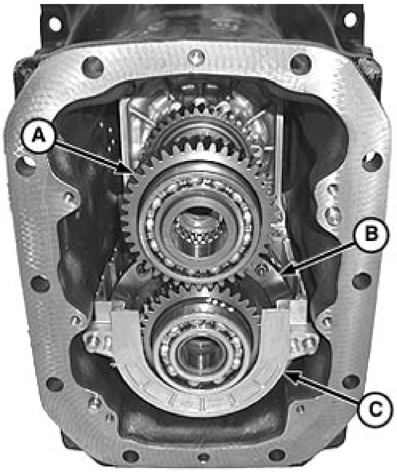
42. Install Hi/Lo clutch shaft (B) along with oil tray (C).

43. Install drive gear (A).

A—Drive Gear
B—Hi/Lo Clutch Shaft
C—Oil Tray



LV11823 –UN–29NOV04



LV11764 –UN–22NOV04

Continued on next page

OUO1082,0000338 –19–17NOV04–13/14

44. Install plate (B) and cap screws (A). Tighten cap screws to specification.

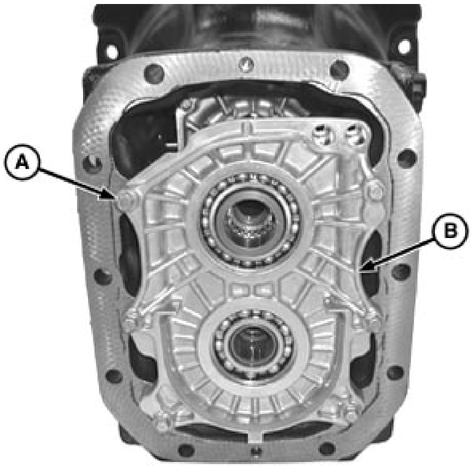
Specification

Rear Plate-to-Clutch Housing Cap Screw—Torque .... 26 N•m (20 lb-ft)

45. Install POWRREVERSER control valve. (See Remove and Install POWRREVERSER Control Valve in Section 50, Group 12.)

46. Install EH Hi/Lo valve. (See Remove and Install EH Hi/Lo Valve in Section 50, Group 12.)

47. Install clutch housing to transmission. (See Install Clutch Housing to Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)



LV11763 –UN–22NOV04

A—Cap Screw (6 used)
B—Plate

OUO1082,0000338 –19–17NOV04–14/14

Disassemble, Inspect, and Repair Reverse Idle Gear—Transmissions Without EH Hi/Lo

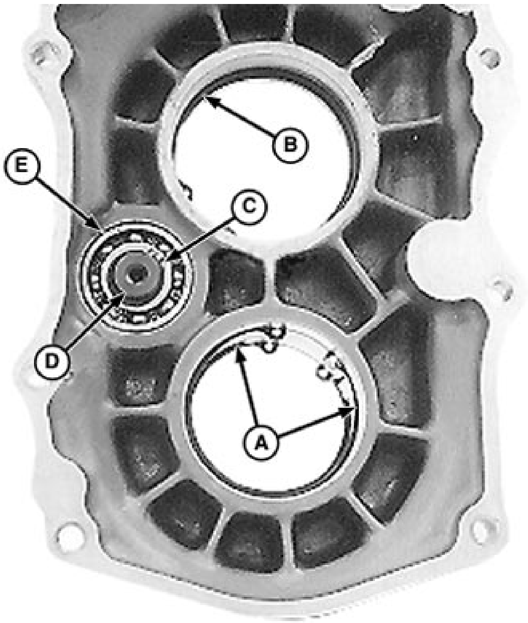
1. Remove retaining rings (A and B).

2. Remove retaining ring (C).

NOTE: Reverse idle gear (D) is press fit. Remove reverse idle gear (D) using a bushing, bearing, and seal driver set.

3. Remove idle gear (D) and bearing (E).

A—Retaining Ring (2 used)
B—Retaining Ring
C—Retaining Ring
D—Reverse Idle Gear
E—Bearing



LV11721 –UN–18NOV04

Continued on next page

OUO1082,0000339 –19–17NOV04–1/2

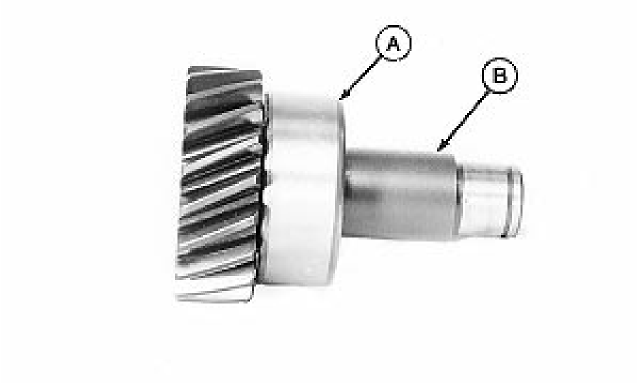
NOTE: Bearing (A) is press fit on shaft (B). Remove bearing only if replacement is necessary.

Remove bearing (A) using a knife-edged puller and press. Install new bearing until seated.

4. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all bearings with clean transmission/hydraulic oil during assembly.

5. Install all parts.



A—Bearing
B—Shaft

OUO1082,0000339 –19–17NOV04–2/2

Disassemble, Inspect, and Repair Reverse Idle Gear—Transmissions With EH Hi/Lo

1. Remove retaining ring (F).

NOTE: Thrust washer (E) has lubrication grooves on one side.

2. Remove thrust washer (E).

NOTE: Bearing (B) is press fit on shaft (A). Remove bearing only if replacement is necessary.

Remove bearing (B) using a knife-edged puller and press. Install new bearing until seated.

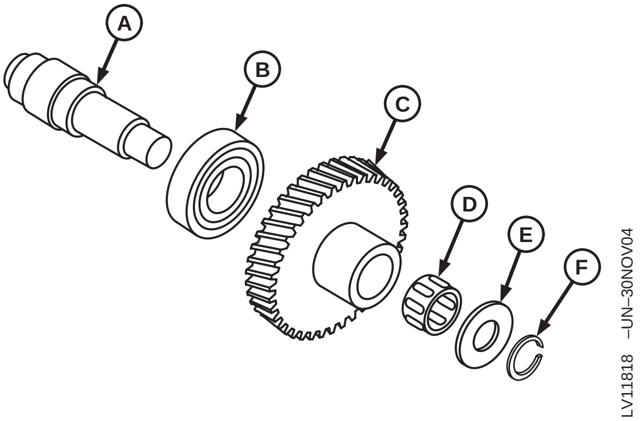
3. Remove idle gear (C) and bearings (D and B).

4. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all bearings with clean transmission/hydraulic oil during assembly.

Grooves on thrust washer (E), MUST face reverse idle gear (C).

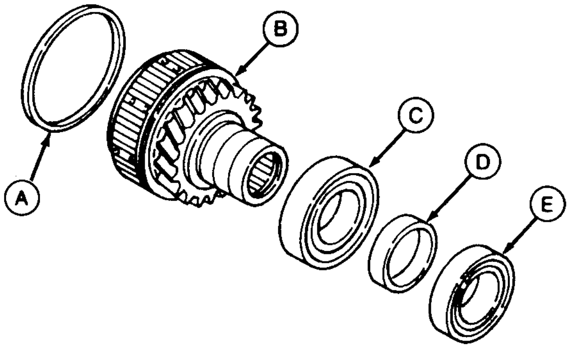
5. Install all parts.



A—Shaft
B—Bearing
C—Reverse Idle Gear
D—Needle Bearing
E—Thrust Washer
F—Retaining Ring

OUO1082,0000341 –19–17NOV04–1/1

Disassemble, Inspect, and Repair Clutch Gear—Transmissions Without EH Hi/Lo



LV1220A –UN–15DEC94

NOTE: Bearings (C and E) are press fit on clutch gear (B).

1. Remove bearings (C and E) using a knife-edged puller and a press.

IMPORTANT: Replace seal. Damaged or used seal will leak.

2. Remove all parts.
3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Install all parts and bearings (C and E) using a bearing, bushing, and seal driver set and a press.

LV1078 –UN–15DEC94

A—Seal
B—Clutch Gear
C—Ball Bearing
D—Collar
E—Bearing

OUO1082,000033A –19–17NOV04–1/1

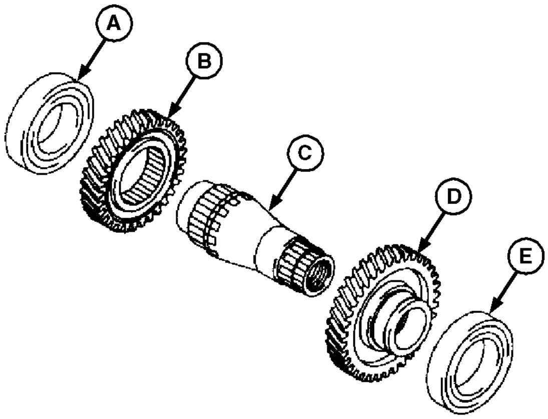
Disassemble, Inspect, and Repair Connect Shaft—Transmissions With EH Hi/Lo

NOTE: Bearings (A and E) are press fit.

1. Remove bearings (A and E) using a knife-edged puller and a press.
2. Remove all parts.
3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Install all parts and bearings (A and E) using a bearing, bushing, and seal driver set and a press.



LV11751 –UN–23NOV04

A—Bearing
B—Gear
C—Shaft
D—Gear
E—Bearing

LV11819 –UN–24NOV04

OUO1082,0000562 –19–15DEC04–1/1

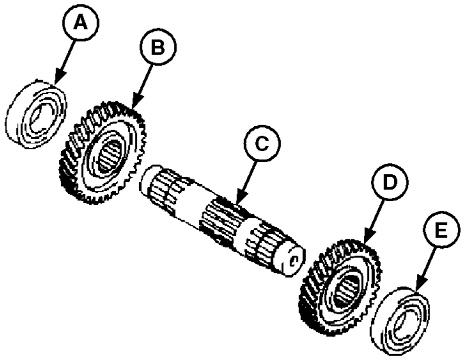
Disassemble, Inspect, and Repair Driven Shaft—Transmissions Without EH Hi/Lo

NOTE: Bearings (A and E) are press fit on shaft (C).

1. Remove bearings (A and E) using a knife-edged puller and a press.
2. Remove all parts.
3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Install all parts and bearings (A and E) using a bearing, bushing, and seal driver set and a press.

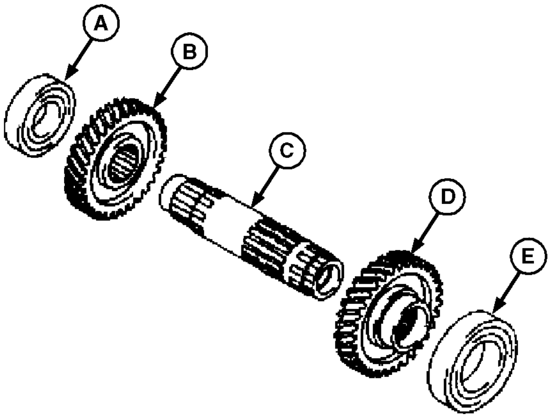


LV11824 –UN–29NOV04

A—Ball Bearing
B—Drive Gear
C—Driven Shaft
D—Drive Gear
E—Ball Bearing

OUO1082,000033C –19–17NOV04–1/1

Disassemble, Inspect, and Repair Driven Shaft—Transmissions With EH Hi/Lo



LV11752 –UN–23NOV04

NOTE: Bearings (A and E) are press fit.

1. Remove bearings (A and E) using a knife-edged puller and a press.

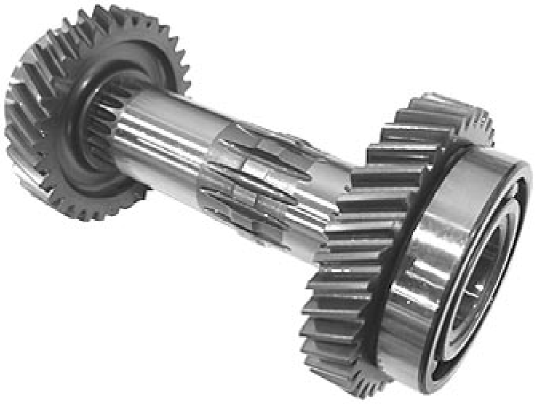
2. Remove all parts.

3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Install all parts and bearings (A and E) using a bearing, bushing, and seal driver set and a press.

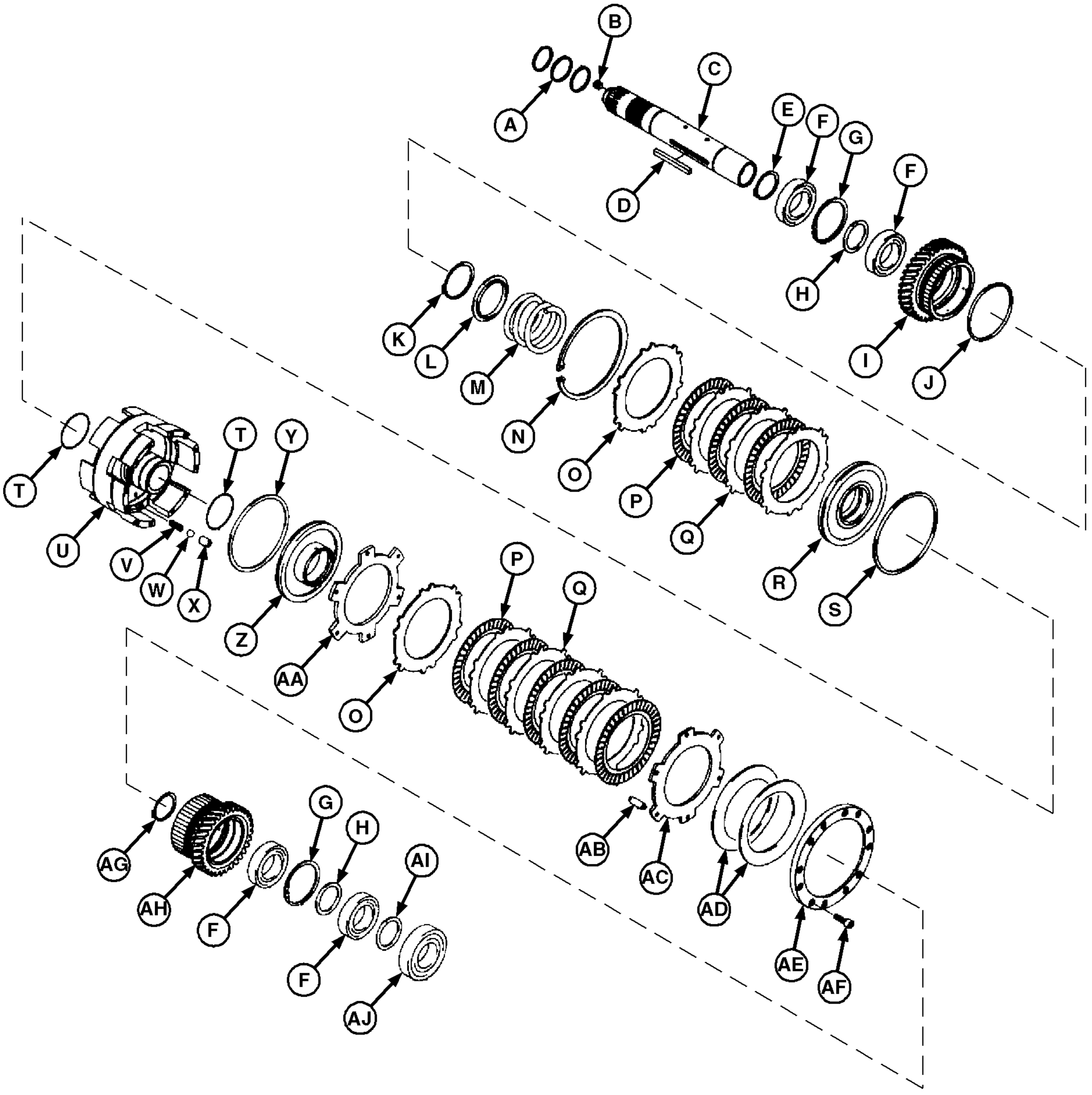
A—Ball Bearing
B—Drive Gear
C—Driven Shaft
D—Drive Gear
E—Ball Bearing



LV11820 –UN–29NOV04

OUO1082,0000342 –19–18NOV04–1/1

Disassemble, Inspect, and Repair Hi/Lo Clutch Shaft—Transmissions With EH Hi/Lo



LV11754 –UN–29NOV04

A—Ring Seal (3 used)
B—Plug (2 used)
C—Clutch Shaft
D—Key
E—Snap Ring (2 used)
F—Bearing (4 used)
G—Snap Ring (2 used)
H—Spacer (2 used)
I—Gear
J—Seal
K—Snap Ring
L—Spring Seat
M—Spring
N—Snap Ring
O—End Plate (2 used)
P—Hi/Lo Clutch Disk (8 used)
Q—Plate (7 used)
R—Clutch Piston
S—Seal
T—Seal (2 used)
U—Clutch Cylinder
V—Spring
W—Ball
X—Bleeder
Y—Seal
Z—Clutch Piston
AA—Inner Pin Plate
AB—Pin (6 used)
AC—Outer Pin Plate
AD—Spring (2 used)
AE—Cover
AF—Cover Screw (12 used)
AG—Snap Ring
AH—Gear
AI—Spacer (same as "H")
AJ—Bearing

Continued on next page

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

NOTE: Plugs (B) are factory sealed and are not replaceable.

1. Remove seals (A).
2. Remove snap ring (E).
3. Remove gear (I) along with bearings (F), snap ring (G) and spacer (H).
4. Remove seal (J).
5. Remove clutch cylinder (U).
6. Remove bearing (AJ) and spacer (AI).
7. Remove gear (AH) along with bearings (F), snap ring (G) and spacer (H).
8. Remove snap ring (AG).
9. Evenly loosen all cover screws (AF) until pressure from springs (AD) is released.
10. Remove cover screws (AF) and cover (AE).

NOTE: Springs must be installed in proper direction. Mark direction that springs are installed for ease of installation.

11. Remove springs (AD). Replace springs (AD) if length of spring under no load is less than specification.

Specification	
Lo Clutch Springs—Height	6.1 mm (0.240 in.)

12. Remove outer pin plate (AC) and six pins (AB).
13. Remove five disks (P), four plates (Q), and end plate (O).
14. Remove inner pin plate (AA).
15. Remove bleeder (X), ball (W) and spring (V).
16. Remove snap ring (N).
17. Remove end plate (O), three disks (P), and three plates (Q).
18. Inspect disks (P) and plates (Q and O) for cracks or damage. Replace if necessary. Measure disk and plate thickness. Replace if less than specifications.

Specification	
Hi/Lo Clutch Disk—Minimum Thickness	2.04 mm (0.080 in.)
Hi/Lo Clutch Plate—Minimum Thickness	1.37 mm (0.054 in.)
Hi/Lo Clutch End Plate—Minimum Thickness	3.00 mm (0.118 in.)
Lo Clutch Outer Pin Plate—Minimum Thickness	4.30 mm (0.169 in.)

Continued on next page

NOTE: Dealers with Special Tool JDT24A need only purchase new center tee JDT24-3 to make Special Tool JDT24B.

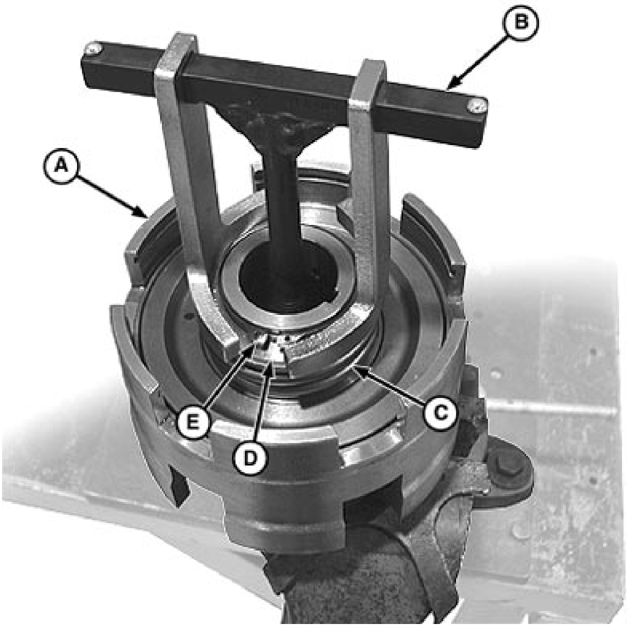
19. Disassemble clutch piston by placing clutch cylinder (A) and Special Tool JDT24B (B) on a press or flat-jawed vise.

20. Compress spring seat (D) and spring (C). Remove snap ring (E).

21. Slowly release pressure of special tool and remove parts (B—E). Replace spring (C) if length of spring under no load is less than specification.

Specification

Hi Clutch Spring—Minimum Height .... 48.6 mm (1.913 in.)

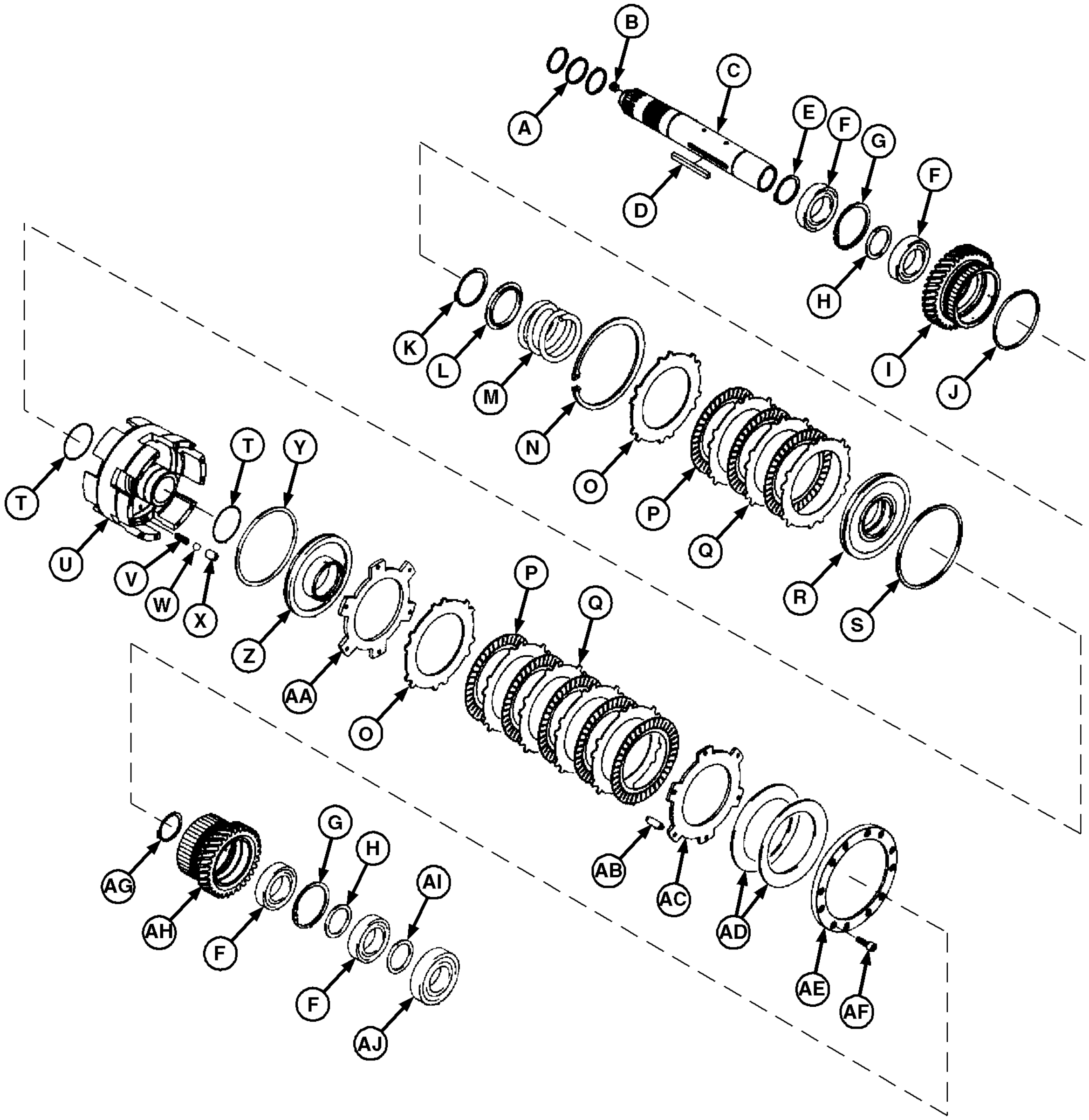


LV11833 –UN–01DEC04

A—Clutch Cylinder
B—Special Tool JDT24B
C—Spring
D—Spring Seat
E—Snap Ring

Continued on next page

OUO1082,000033F –19–17NOV04–3/5



LV11754 –UN–29NOV04

A—Ring Seal (3 used)
B—Plug
C—Clutch Shaft
D—Key
E—Snap Ring (2 used)
F—Bearing (4 used)
G—Snap Ring (2 used)
H—Spacer (2 used)
I—Gear
J—Seal
K—Snap Ring
L—Spring Seat
M—Spring
N—Snap Ring
O—End Plate (2 used)
P—Hi/Lo Clutch Disk (8 used)
Q—Plate (7 used)
R—Clutch Piston
S—Seal
T—Seal (2 used)
U—Clutch Cylinder
V—Spring
W—Ball
X—Bleeder
Y—Seal
Z—Clutch Piston
AA—Inner Pin Plate
AB—Pin (6 used)
AC—Outer Pin Plate
AD—Spring (2 used)
AE—Cover
AF—Cover Screw (12 used)
AG—Snap Ring
AH—Gear
AI—Spacer (same as “H”)
AJ—Bearing

22. Remove pistons (R and Z) and seals (S, T and Y).

23. Inspect all parts for wear or damage. Replace as necessary.

Continued on next page

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

24. Install new seals (T) to clutch cylinder (U).

25. Install new seals (S and Y) onto pistons (R and Z).

26. Install pistons (R and Z) into clutch cylinder (U).

27. Reassemble parts (M, L and K) to clutch cylinder (U) using Special Tool JDT24A.

28. Install snap ring (AG) onto clutch shaft (C).

29. Install key (D) to clutch shaft (C).

NOTE: Screw holes for cover screws (AF) MUST face hollow end of clutch shaft (C).

30. Install clutch cylinder (U) on to clutch shaft (C).

NOTE: When installing large snap ring (N), make sure open end of retaining ring aligns with solid wall of clutch cylinder (U).

31. Install three disks (P), three plates (Q), end plate (O) and snap ring (N).

32. Install new seal (J) onto gear (I).

33. Install snap ring (G) and bearings (F), with spacer (H) between bearings, into gear (I).

NOTE: Rotating gear (I) will align disks (P) and allow gear to fully seat into clutch.

34. Install gear and bearings onto shaft (C).

35. Install snap ring (E).

36. Install spring (V), ball (W) and bleeder (X).

37. Install inner pin plate (AA), end plate (O), five disks (P) and four plates (Q).

38. Install six pins (AB) and outer pin plate (AC).

NOTE: Springs MUST be installed with ID edges of each spring touching.

39. Install springs (AD) with ID edges touching each other.

40. Install cover (AE) and cover screws (AF). Evenly tighten cover screws until snug.

41. Install snap ring (G) and bearings (F), with spacer (H) between bearings, into gear (AH).

NOTE: Rotating gear (AH) will align disks (P) and allow gear to fully seat into clutch.

42. Install gear (AH) onto clutch shaft (C).

43. Tighten cover screws (AF) in a crisscross pattern to specification.

Specification

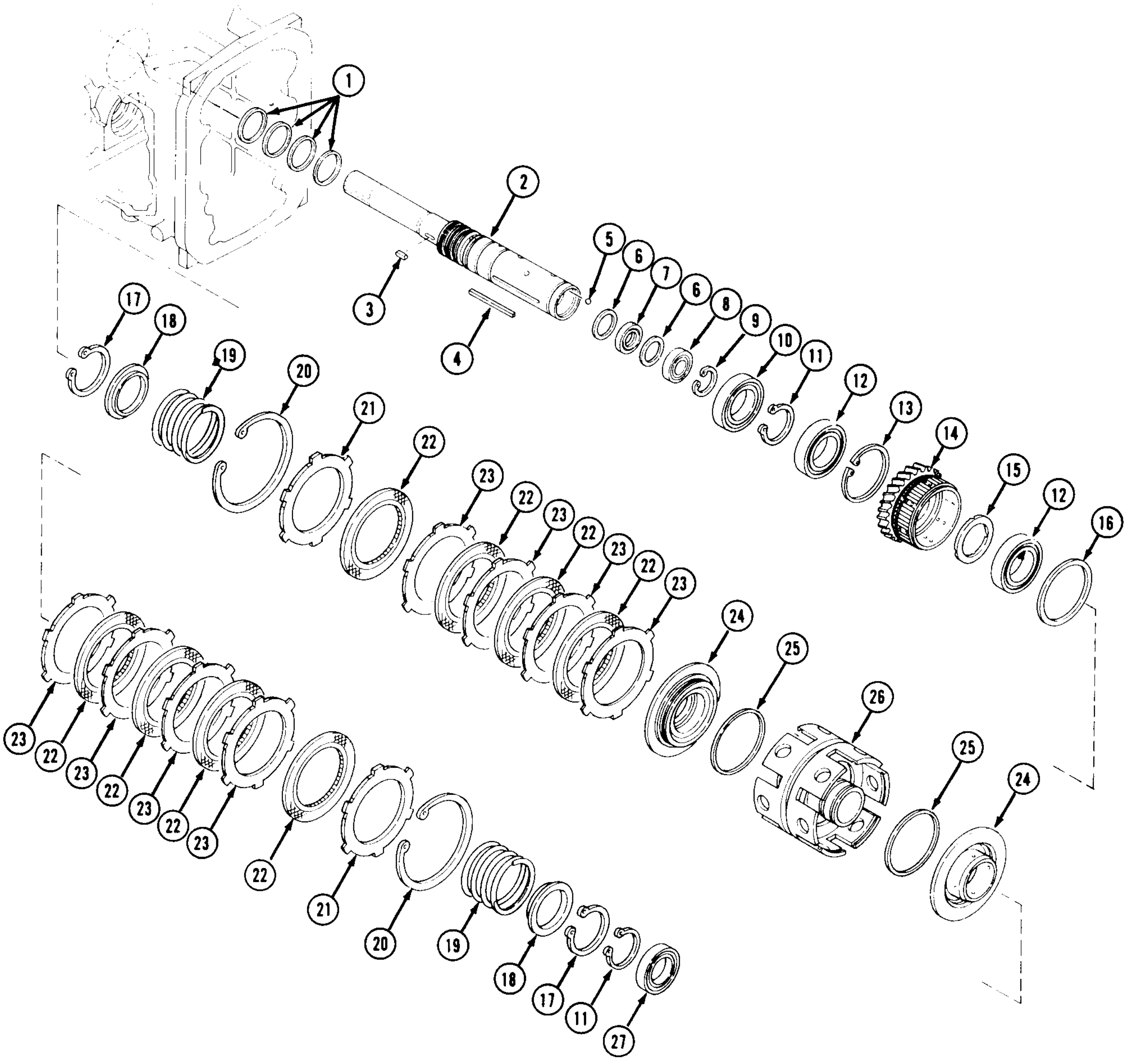
Lo Clutch Cover Screws—
Torque.. 9.8 N•m (87 lb-in.)

44. Install spacer (AI) and bearing (AJ).

45. Install Hi/Lo clutch shaft into clutch housing. (See Remove and Install POWRREVERSER—Transmissions With EH Hi/Lo in Section 50, Group 12.)

OUO1082,000033F –19–17NOV04–5/5

Disassemble, Inspect, and Repair POWRREVERSER™—Transmissions Without EH Hi/Lo


1
2
3
4
5
6
7
6
8
9
10
11
12
13
14
15
12
16
17
18
19
20
21
22
23
22
23
22
23
22
23
24
25
26
25
24
23
22
23
22
23
22
23
22
21
20
19
18
17
11
27

LV1223A –UN–15SEP95

1—Ring Seal (4 used)
2—Shaft
3—Key
4—Key
5—Ball (4 used)
6—Washer (2 used)
7—Seal
8—Bearing
9—Snap Ring
10—Ball Bearing
11—Snap Ring (2 used)
12—Bearing (2 used)
13—Snap Ring
14—Clutch Gear
15—Washer
16—Seal
17—Snap Ring (2 used)
18—Support (2 used)
19—Spring (2 used)
20—Retaining Ring (2 used)
21—PR Clutch End Plate (2 used)
22—PR Clutch Disk (8 used)
23—PR Clutch Plate (8 used)
24—Piston (2 used)
25—Seal (2 used)
26—Clutch Cylinder
27—Ball Bearing

POWRREVERSER is a trademark of Deere & Company

Continued on next page

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

1. Remove seals (1) and key (3).

NOTE: Bearing (27) is press fit on shaft (2).

2. Remove bearing (27) using a knife-edged puller.
3. Remove retaining ring (20) and parts (21—23) on both sides of clutch cylinder (26).
4. Inspect disks (22) and plates (21 and 23) for cracks or damage. Replace if necessary. Measure disk and plate thickness. Replace if less than specifications.

Specification	
PR Clutch Disk—Minimum Thickness	2.7 mm (0.106 in.)
PR Clutch End Plate—Minimum Thickness	5.85 mm (0.230 in.)
PR Clutch Plate—Minimum Thickness	3.85 mm (0.151 in.)

5. Remove snap ring (11) from transmission end of shaft (2).
6. Remove clutch cylinder (26) containing parts (17—19), piston (24), and seal (25).
7. Remove seals (25) from piston (24).
8. Remove parts (11—16) and key (4) from shaft (2).

NOTE: Bearing (10) is press fit on shaft (2). Inspect bearing (10) for wear or damage. Replace only if necessary.

9. Remove bearing (10) from charge pump end of shaft (2) using a knife-edged puller and a press.

NOTE: Seal (7) is press fit inside shaft (2). Inspect seal (7) for wear or damage. Replace only if necessary.

10. Remove snap ring (9), bearing (8), and washer (6).
11. Pry out seal (7) and remove washer (6) behind seal.

NOTE: Balls (5) are press fit and are not replaceable.

12. Inspect shaft (2) for wear or damage. Replace if necessary.

Continued on next page

NOTE: Dealers with Special Tool JDT24A need only purchase new center tee JDT24-3 to make Special Tool JDT24B.

13. Disassemble clutch piston by placing clutch cylinder (A) and Special Tool JDT24B (B) on a press or flat-jawed vise.

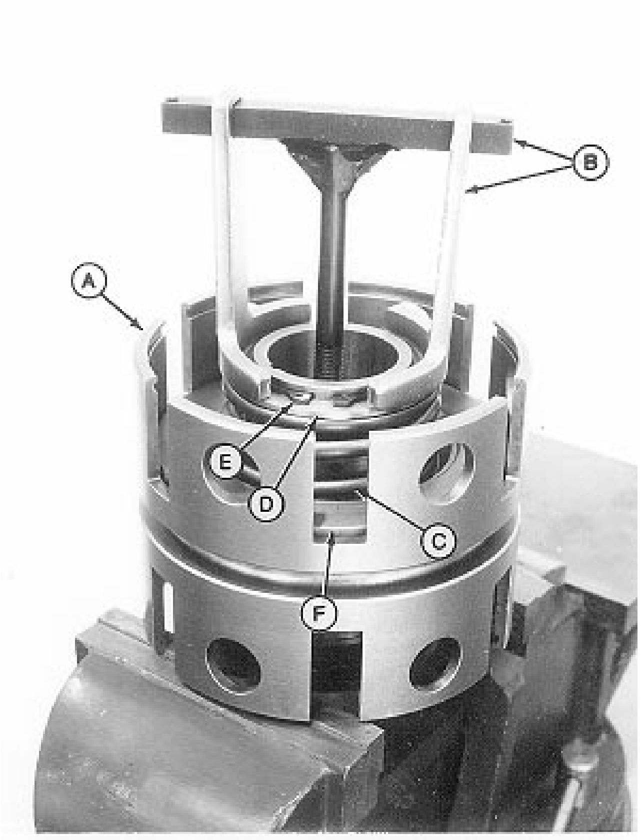
14. Compress spring (C) and support (D). Remove snap ring (E).

15. Slowly release pressure of special tool and remove parts (B—E) and piston (F).

NOTE: Replace springs (C) if length of spring under no load is less than 58 mm (2.28 in.).

16. Repeat procedure for other side of clutch cylinder.

17. Inspect all parts for wear or damage. Replace as necessary.

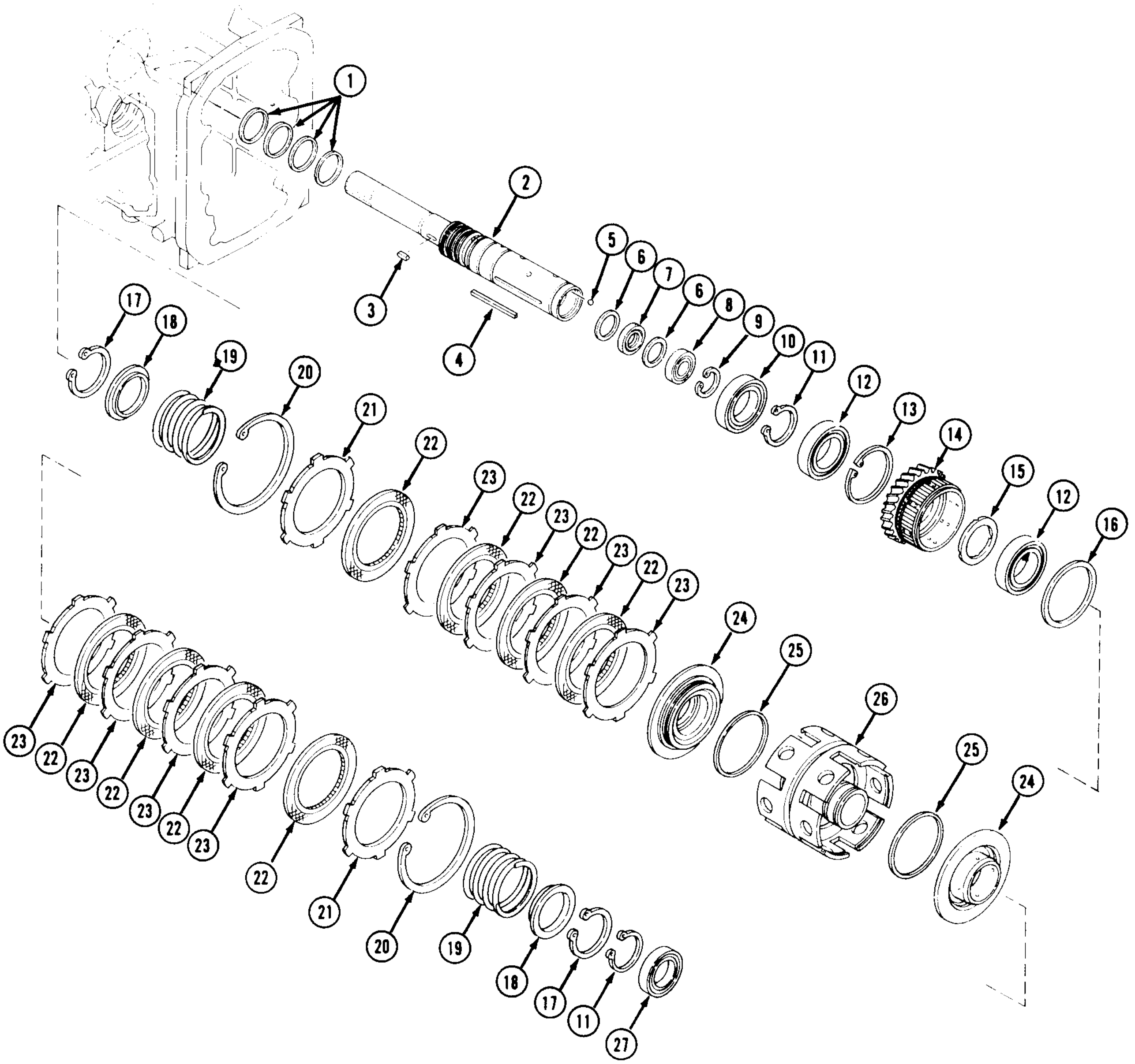


LV1228 –UN–09JAN95

A—Clutch Cylinder
B—Special Tool JDT24B
C—Spring
D—Support
E—Snap Ring
F—Piston

Continued on next page

OUO1082,000033D –19–17NOV04–3/5


1
2
3
4
5
6
7
6
8
9
10
11
12
13
14
15
12
16
17
18
19
20
21
22
23
22
23
22
23
22
23
24
25
26
25
24
23
22
23
22
23
22
23
22
21
20
19
18
17
11
27

LV1223A –UN–15SEP95

1—Ring Seal (4 used)
2—Shaft
3—Key
4—Key
5—Ball (4 used)
6—Washer (2 used)
7—Seal
8—Bearing
9—Snap Ring
10—Ball Bearing
11—Snap Ring (2 used)
12—Bearing (2 used)
13—Snap Ring
14—Clutch Gear
15—Washer
16—Seal
17—Snap Ring (2 used)
18—Support (2 used)
19—Spring (2 used)
20—Retaining Ring (2 used)
21—PR Clutch End Plate (2 used)
22—PR Clutch Disk (8 used)
23—PR Clutch Plate (8 used)
24—Piston (2 used)
25—Seal (2 used)
26—Clutch Cylinder
27—Ball Bearing

Continued on next page

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

18. Install washer (6) inside transmission end of shaft (2).

19. Install seal (7) using a bushing, bearing, and seal driver set and a press.

20. Install washer (6), bearing (8), and snap ring (9).

21. Install snap ring (11).

22. Install bearing (10) from the PTO clutch end of shaft (2) using a bushing, bearing, and seal driver set. Install bearing (10) until seated against snap ring (11).

23. Install parts (12—16) on shaft (2).

24. Reassemble parts (17, 18, 19, 24, and 25) on both sides of clutch cylinder (26) using Special Tool JDT24A.

25. Install key (4).

NOTE: Make sure the radius on plate (21) is toward the large retaining ring (20).

26. Install parts (21—23) on clutch gear (14).

NOTE: When installing large retaining rings (20), make sure open end of retaining ring aligns with solid wall of clutch cylinder (26).

27. Install clutch cylinder (26) and back retaining ring (20).

NOTE: Make sure the radius on plate (21) is toward the large retaining ring (20).

28. Install parts (21—23) and front retaining ring (20).

NOTE: When installing large retaining rings (20), make sure open end of retaining ring aligns with solid wall of clutch cylinder (26).

29. Install snap ring (11) and seals (1).

30. Install bearing (27) using a bushing, bearing, and seal driver set.

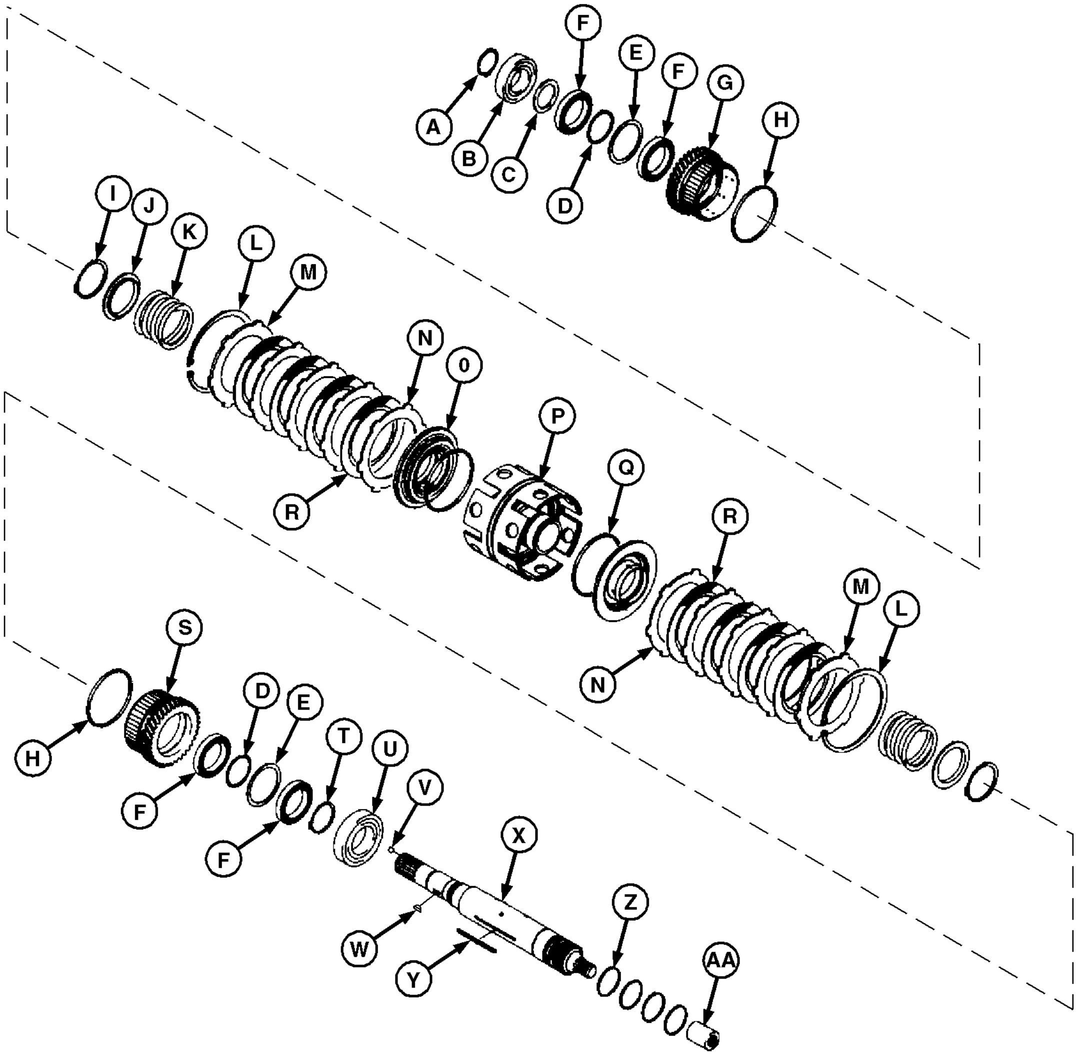
31. Install key (3) in shaft (2).

32. Install clutch housing to transmission. (See Install Clutch Housing to Transmission—Straddle Mount or Install Clutch Housing to Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)

33. Pressure test control valve to check operation of clutch. (See Reference 255-15-001, POWRREVERSER Control Valve Tests in TM2097 Section 250, Group 16.)

OUO1082,000033D –19–17NOV04–5/5

Disassemble, Inspect, and Repair POWRREVERSER™—Transmissions With EH Hi/Lo



LV11753 –UN–30NOV04

A—Snap Ring
B—Bearing
C—Washer
D—Washer (2 used)
E—Snap Ring (2 used)
F—Bearing (4 used)
G—Clutch Gear
H—Seal (2 used)
I—Snap Ring (2 used)
J—Support (2 used)
K—Spring (2 used)
L—Retaining Ring (2 used)
M—PR Clutch End Plate (2 used)
N—PR Clutch Plate (8 used)
O—Piston (2 used)
P—Clutch Cylinder
Q—Seal (2 used)
R—PR Clutch Disk (8 used)
S—Clutch Gear
T—Snap Ring
U—Bearing
V—Ball (4 used)
W—Key
X—Shaft
Y—Key
Z—Ring Seal (4 used)
AA—Coupler

POWRREVERSER is a trademark of Deere & Company

Continued on next page

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

NOTE: Balls (V) are permanently installed, do not remove. If damaged, replace shaft (X).

1. Remove coupler (AA).
2. Remove four ring seals (Z) and key (W).
3. Remove bearing (U).
4. Remove snap rings (A and T).
5. Remove bearing (B) and washer (C).
6. Remove clutch gears (G and S), bearings (F), washers (D), and snap rings (E).
7. Remove retaining ring (L) and parts (M, N, and R) on both sides of clutch cylinder (P).
8. Inspect disks (R) and plates (M and N) for cracks or damage. Replace if necessary. Measure disk and plate thickness. Replace if less than specifications.

Specification	
PR Clutch Disk—Minimum Thickness	2.7 mm (0.106 in.)
PR Clutch End Plate—Minimum Thickness	5.85 mm (0.230 in.)
PR Clutch Plate—Minimum Thickness	3.85 mm (0.151 in.)

NOTE: Clutch cylinder must be assembled on shaft in correct direction. Mark clutch cylinder to indicate direction for ease of assembly.

9. Remove clutch cylinder (P) containing parts (I—K), pistons (O), and seals (Q).
10. Remove key (Y) from shaft (X).

NOTE: Balls (V) are press fit and are not replaceable.

11. Inspect shaft (X) for wear or damage. Replace if necessary.

Continued on next page

OUO1082,0000340 –19–17NOV04–2/5

NOTE: Dealers with Special Tool JDT24A need only purchase new center tee JDT24-3 to make Special Tool JDT24B.

12. Disassemble clutch piston by placing clutch cylinder (A) and Special Tool JDT24B (B) on a press or flat-jawed vise.

13. Compress spring (C) and support (D). Remove snap ring (E).

NOTE: Replace springs (C) if length of spring under no load is less than 58 mm (2.28 in.).

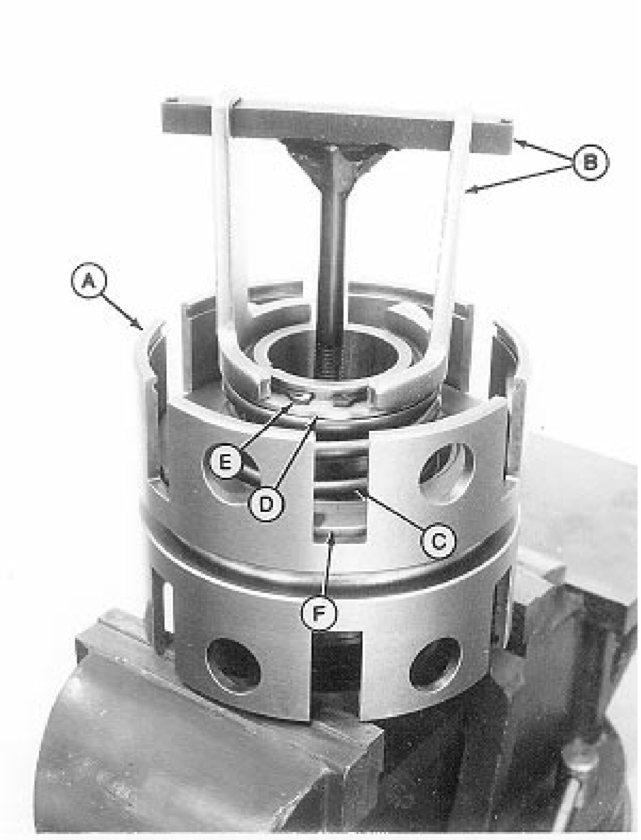
14. Slowly release pressure of special tool and remove parts (B—E).

15. Remove piston (F) from clutch cylinder.

16. Remove seals (Q) from pistons.

17. Repeat procedure for other side of clutch cylinder.

18. Inspect all parts for wear or damage. Replace as necessary.

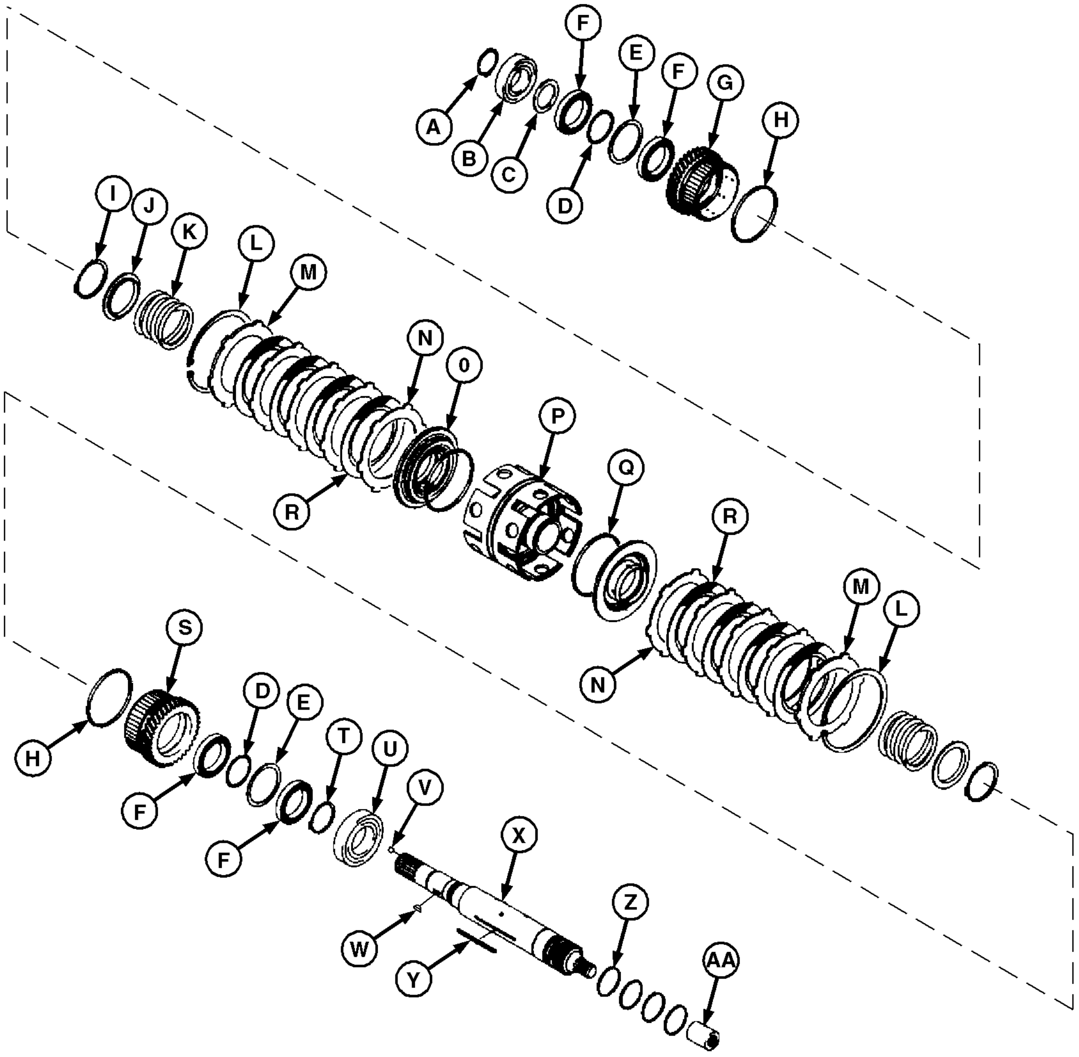


LV1228 –UN–09JAN95

A—Clutch Cylinder
B—Special Tool JDT24B
C—Spring
D—Support
E—Snap Ring
F—Piston

Continued on next page

OUO1082,0000340 –19–17NOV04–3/5



LV11753 –UN–30NOV04

A—Snap Ring
B—Bearing
C—Washer
D—Washer (2 used)
E—Snap Ring (2 used)
F—Bearing (4 used)
G—Clutch Gear
H—Seal (2 used)
I—Snap Ring (2 used)
J—Support (2 used)
K—Spring (2 used)
L—Retaining Ring (2 used)
M—PR Clutch End Plate (2 used)
N—PR Clutch Plate (8 used)
O—Piston (2 used)
P—Clutch Cylinder
Q—Seal (2 used)
R—PR Clutch Disk (8 used)
S—Clutch Gear
T—Snap Ring
U—Bearing
V—Ball
W—Key
X—Shaft
Y—Key
Z—Ring Seal (4 used)
AA—Coupler

Continued on next page

OUO1082,0000340 –19–17NOV04–4/5

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

19. Install washer (C) and bearing (B) on shaft (X). Install bearing until washer is seated against shoulder of shaft.

20. Install snap ring (A).

21. Install snap ring (E) and bearings (F), with washer (D) between bearings, in clutch gear (G).

22. Install seal (H) on clutch gear (G).

23. Install clutch gear (G) on shaft (X).

24. Reassemble parts (I—K, O, and Q) on both sides of clutch cylinder (P) using Special Tool JDT24A.

25. Install key (Y).

NOTE: Make sure the radius on plate (M) is toward the large retaining ring (L).

26. Install parts (M, N and R) on clutch gear (G).

NOTE: Clutch cylinder must be assembled on shaft in correct direction. Install clutch cylinder in direction as marked in disassembly.

When installing large retaining rings (L), make sure open end of retaining ring aligns with solid wall of clutch cylinder (P).

27. Install clutch cylinder (P) onto shaft (X) and align clutch cylinder with plates (M and N). Install retaining ring (L).

NOTE: Make sure the radius on plate (M) is toward the large retaining ring (L).

When installing large retaining rings (L), make sure open end of retaining ring aligns with solid wall of clutch cylinder (P).

28. Install parts (M, N and R) and front retaining ring (L) into clutch cylinder.

29. Install snap ring (E) and bearings (F), with washer (D) between bearings, in clutch gear (S).

30. Install seal (H) on clutch gear (S).

NOTE: Rotating gear (S) will align disks (R) and allow gear to fully seat into clutch.

31. Install clutch gear (S) on shaft (X).

32. Install snap ring (T) and bearing (U).

33. Install ring seals (Z).

34. Install key (W) in shaft (X).

35. Install POWRREVERSER to clutch housing. (See Remove and Install POWRREVERSER—Transmissions With EH Hi/Lo in Section 50, Group 12.)

OUO1082,0000340 –19–17NOV04–5/5

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

OUO1082,0000303 –19–26OCT04–1/2

Park Cam Shim Gauge RE188114

Park pawl adjustment.

OUO1082,0000303 –19–26OCT04–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,0000304 –19–26OCT04–1/3

Flywheel Turning Tool JDE83

Used to rotate flywheel (4-cylinder).

Flywheel Turning Tool JDG1704

Used to rotate flywheel (5-cylinder).

OUO1082,0000304 –19–26OCT04–2/3

Bushing, Bearing, and Seal Driver Set

Used to replace bushings of shift arm.

OUO1082,0000304 –19–26OCT04–3/3

Other Material

Number	Name	Use
PM38657 (U.S.) PM38628 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Apply to mating surfaces of transmission and clutch housings. Apply to mating surfaces of transmission and differential housings.
PM38656 (U.S.) NA (Canadian) NA (LOCTITE®)	Form-in-Place Gasket	Apply to shift lever housing.
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cleans parts and speeds cure of sealant on shift fork cap screw threads.
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to shift fork cap screw threads. Apply to threads of reverse idler shaft.
TY6333 (U.S.) CXTY6333 (Canadian)	Lithium Grease with Molybdenum Disulphide	Apply to ID of reverse, 1st speed, 2nd speed and 3rd speed drive gears. Apply to ID of MFWD and range gears.

LOCTITE is a trademark of Loctite Corp.

OUO1082,0000306 –19–26OCT04–1/1

Specifications

Item	Measurement	Specification
Clutch Housing-to-Transmission Cap Screw	Torque	140 N•m (105 lb-ft)
Transmission-to-Differential Cap Screw	Torque	140 N•m (105 lb-ft)
Park Cam Cover Cap Screw	Torque	27 N•m (20 lb-ft)
Reverse Idler Shaft	Torque	132 N•m (97 lb-ft)

OUO1082,0000307 –19–26OCT04–1/1

Separate Clutch Housing from Transmission—Straddle Mount

1. Disconnect negative (—) battery cable.

2. Drain hydraulic oil from transmission.

CAUTION: If tractor is equipped with optional front weights, remove weights and weight support before removing any transmission-to-clutch housing mounting hardware.

3. Remove front weights and bracket, if equipped.

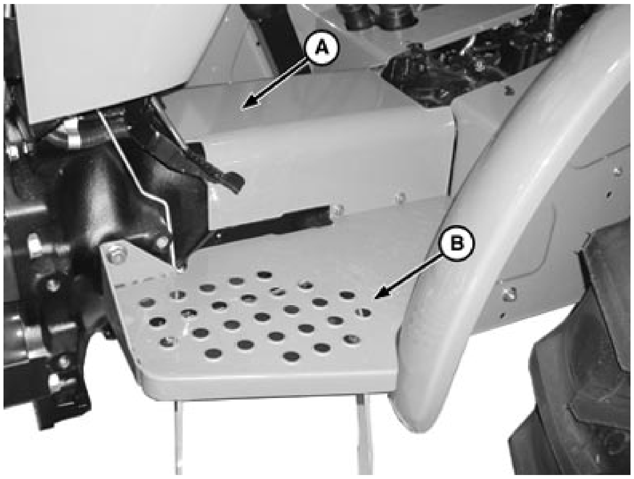
4. Remove seat and support. (See Remove and Install Seat and Support—Straddle Mount in Section 90, Group 05.)

5. Remove center support (A). Remove left-side step plate (B). Remove foot throttle contol and right-side step plate.

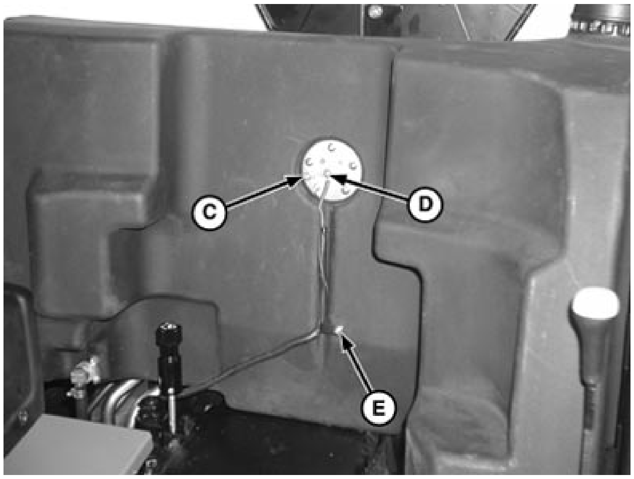
6. Loosen clamp (E).

NOTE: Tag or label all electrical connectors to aid during installation.

7. Disconnect wire leads (C and D).



LV10872 –UN–06OCT04



LV10873 –UN–06OCT04

A—Center Support
B—Left-Side Step Plate
C—Wire Lead
D—Wire Lead
E—Clamp

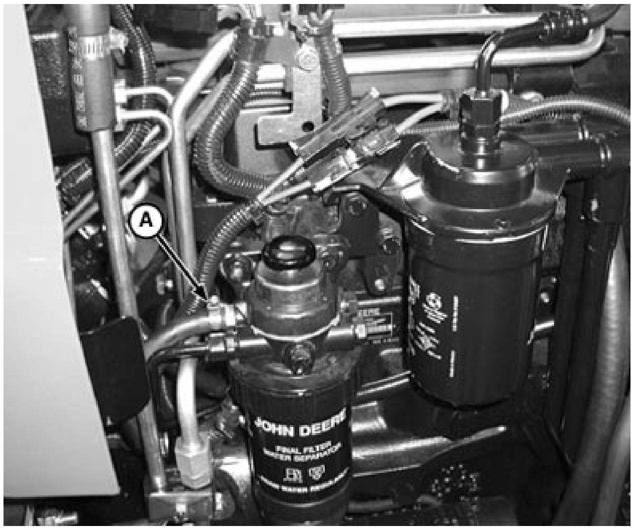
Continued on next page

JG31785,00000C6 –19–28SEP04–1/7

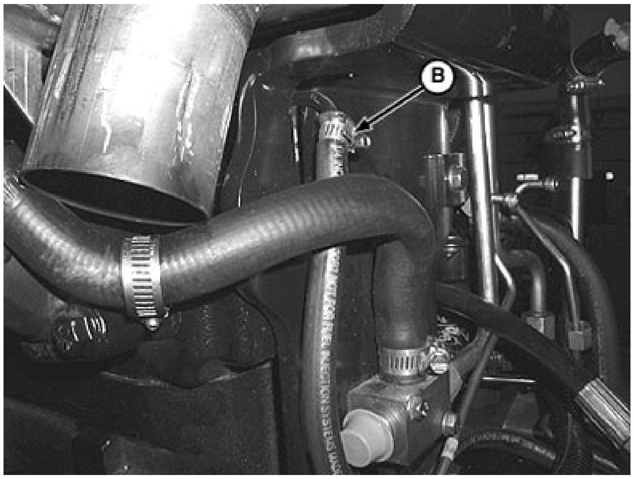
NOTE: Close all openings using caps and plugs to prevent contamination.

8. Disconnect fuel supply and return hoses (A and B). Close all openings using caps and plugs.

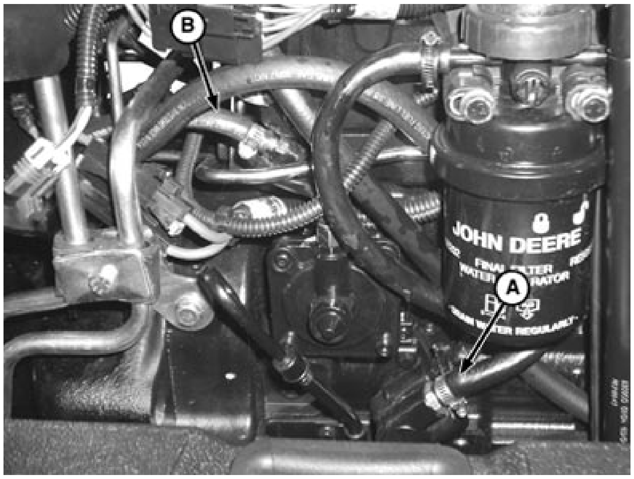
A—Fuel Supply Hose
B—Fuel Return Hose


A
LV10899 –UN–06OCT04

4-Cylinder Supply Hose


B
LV11307 –UN–20OCT04

4-Cylinder Return Hose


B
A
LV11306 –UN–20OCT04

5-Cylinder Hoses

Continued on next page

NOTE: Cut all tie straps as necessary.

9. Disconnect ground wire lead (A), located on transmission cover.

10. Disconnect PTO switch connector (B).

11. Disconnect 7-pin electrical outlet connectors (C).

NOTE: SYNCSHUTTLE™ transmissions: Neutral safety switch is located just below gear and range shift tower.

12. Disconnect neutral safety switch wiring connector.

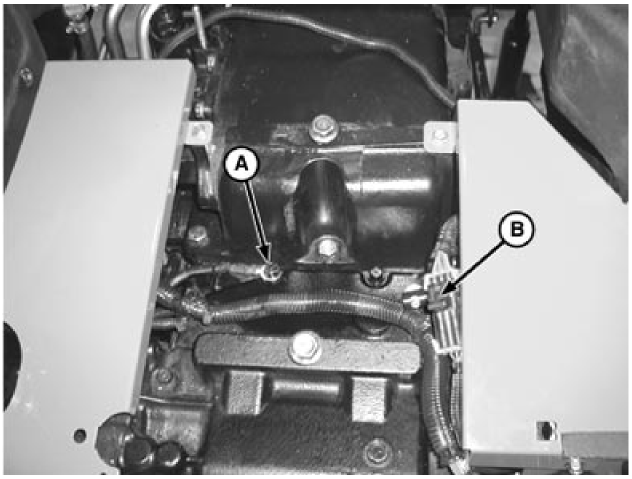
13. POWRREVERSER™ transmissions: Disconnect all wire connectors at POWRREVERSER contol valve.

14. Disconnect lighting electrical connectors near left and right side of ROPS base.

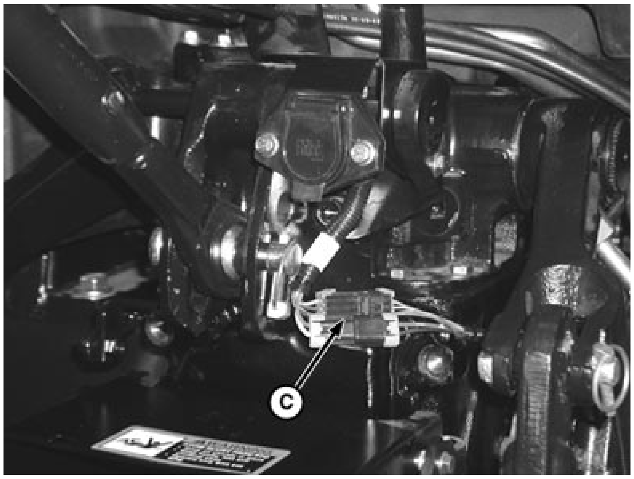
15. Support VEC panel and remove cap screws (D).

16. Move wire harness to front of tractor.

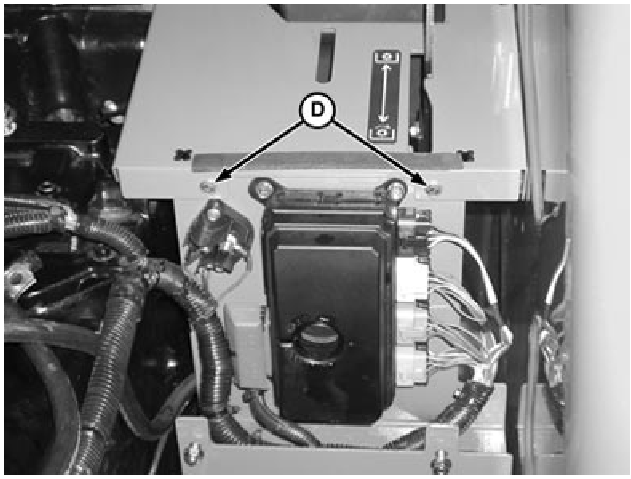
A—Ground Wire Lead
B—PTO Switch Connector
C—7-Pin Electrical Outlet Connectors
D—VEC Mounting Plate Cap Screw (2 used)



LV10875 –UN–06OCT04



LV10876 –UN–06OCT04



LV10877 –UN–07OCT04

SYNCSHUTTLE is a trademark of Deere & Company
POWRREVERSER is a trademark of Deere & Company

Continued on next page

JG31785,00000C6 –19–28SEP04–3/7

NOTE: SCV and Mid-Mount lines vary depending on tractor options. Remove lines as needed.

Remove line supports as needed.

17. Remove or disconnect SCV and Mid-Mount lines.

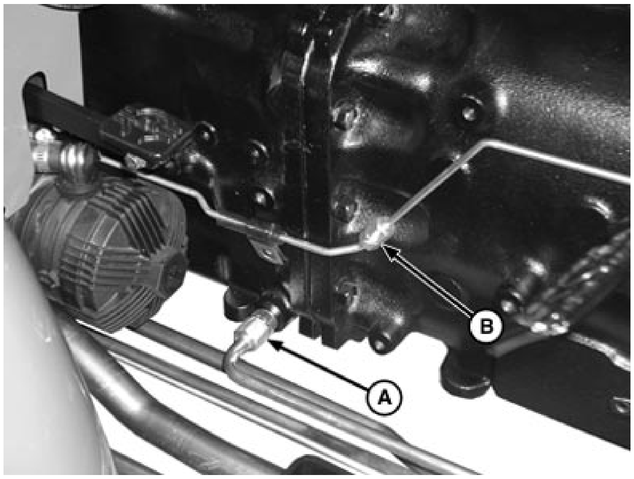
18. Disconnect brake valve return line (A) and brake line (B).

19. Disconnect hydraulic supply line (C).

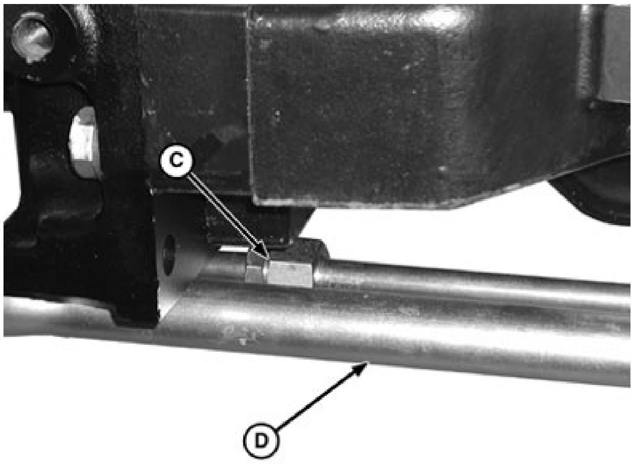
20. Remove hydraulic suction line (D).

21. POWRREVERSER transmissions: Disconnect supply line (E) from right side of clutch housing.

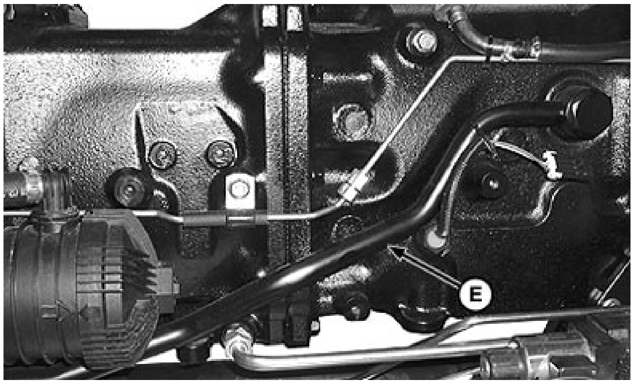
A—Brake Valve Return Line
B—Brake Line
C—Hydraulic Supply Line
D—Hydraulic Suction Line
E—POWRREVERSER Supply Line



LV10878 –UN–07OCT04



LV10879 –UN–07OCT04



LV11427 –UN–27OCT04

Continued on next page

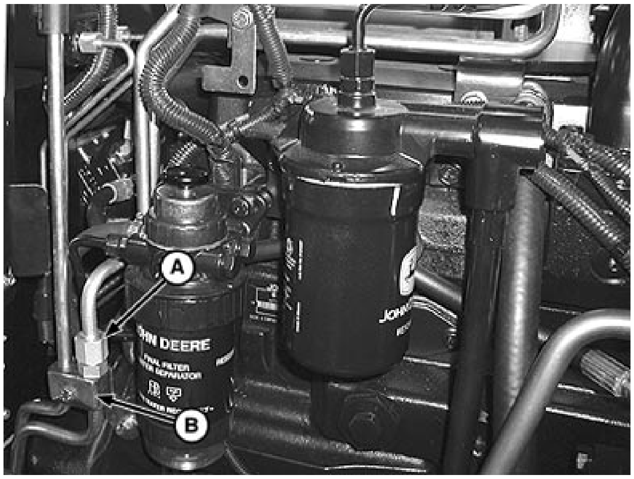
JG31785,00000C6 –19–28SEP04–4/7

22. Disconnect steering return line (A) and remove line clamp (B).

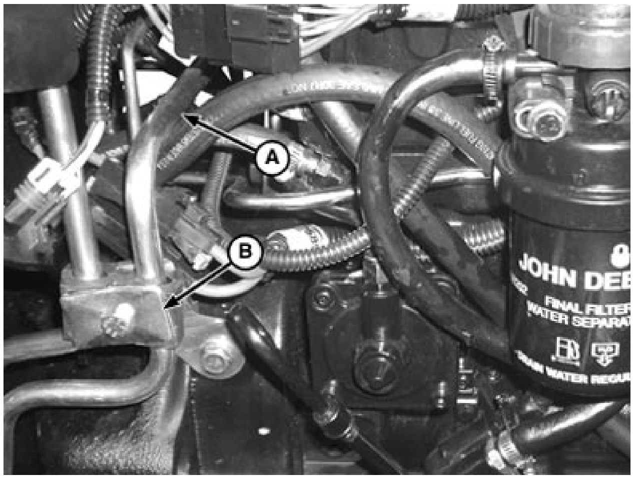
23. Remove MFWD supply line, if equipped.

24. If equipped with 540/540E PTO, disconnect throttle control cable at engine.

A—Steering Return Line
B—Line Clamp


A
B
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV11418 –UN–28OCT04

Return Line With Cooler


A
B
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV11419 –UN–28OCT04

Return Line Without Cooler

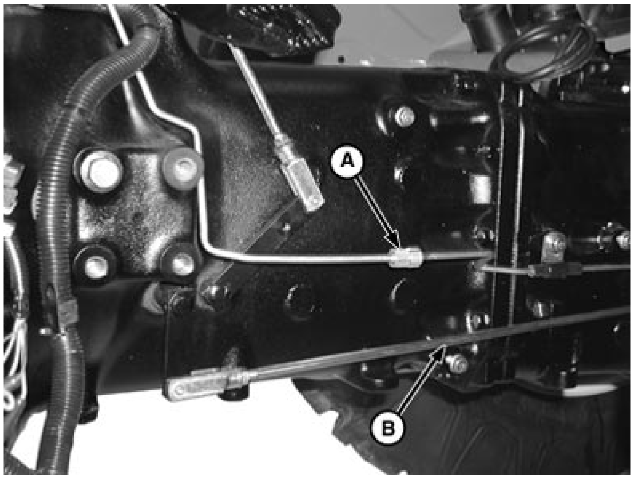
JG31785,00000C6 –19–28SEP04–5/7

25. Disconnect left-side brake line (A).

26. Remove PTO clutch rod (B).

27. Remove MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

A—Left-Side Brake Line
B—PTO Clutch Rod


A
B
LV10886 –UN–07OCT04

Continued on next page

JG31785,00000C6 –19–28SEP04–6/7

28. Install wood blocks between front axle pivot stops and tractor frame. Block front and back of rear wheels.

29. Position a floor jack under the transmission and a support stand under end of drawbar.

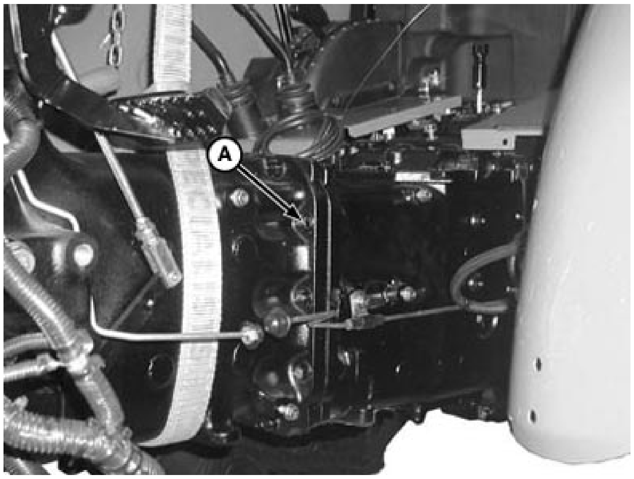
30. Attach a hoist and lifting chains or strap around clutch housing.

31. Place range shift lever in neutral.

NOTE: When separating, the main outer shaft, gear fork shaft, and driven shaft assemblies must remain in transmission case.

32. Remove cap screws (A). Roll front section of tractor (clutch housing) away from rear section (transmission).

33. Install a support stand under clutch housing.

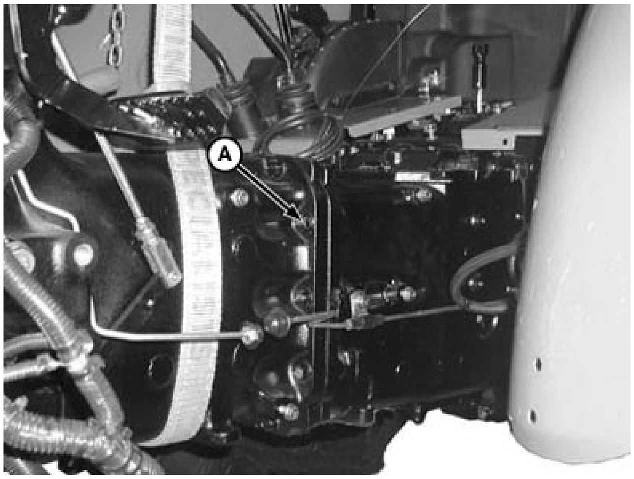


LV10881 –UN–27OCT04

A—Cap Screw (10 used)

JG31785,00000C6 –19–28SEP04–7/7

Install Clutch Housing to Transmission—Straddle Mount



A—Cap Screw (10 used)

1. Clean mating surfaces of transmission and clutch housings, apply Loctite Flexible Form-In-Place Gasket to mating surfaces.

2. Place range shift lever in neutral and gearshift lever in reverse.

IMPORTANT: Do not draw clutch housing against transmission using cap screws or damage will result. Make sure clutch housing and transmission mating surfaces are completely together before tightening cap screws.

NOTE: It may be necessary to rotate the clutch shafts and reverse gears during installation so that the clutch and transmission shafts mesh.

Rotate the PTO shaft by manually turning the PTO at rear of tractor.

Rotate the traction shaft by turning the flywheel using JDE83 (4-cylinder) or JDG1704 (5-cylinder).

Verify that the two bearings and two fork shafts enter holes of clutch housing at the same time.

Verify that the two pins enter the holes in transmission housing.

3. Install clutch housing to transmission. Tighten cap screws (A) to specification.

Specification

Clutch Housing-to-Transmission
Cap Screw—Torque .... 140 N•m (105 lb-ft)

4. Install MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

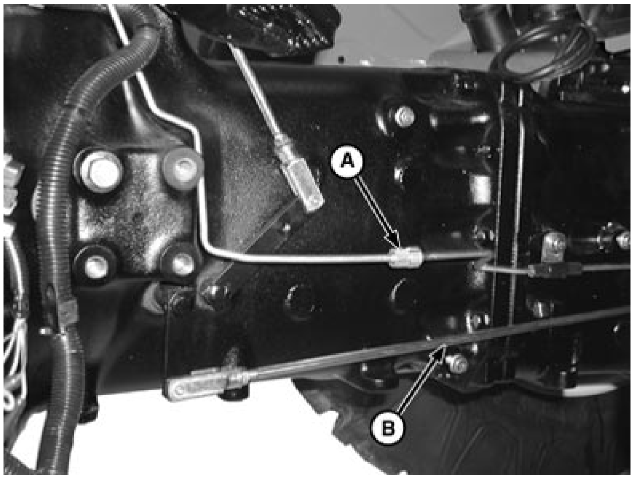
Continued on next page

IMPORTANT: Make sure all O-rings are in place and in good condition before making any hydraulic line connections. Damaged or missing O-rings and seals will leak.

5. Connect left-side brake line (A).

6. Install PTO clutch rod (B).

A—Left-Side Brake Line
B—PTO Clutch Rod



LV10886 –UN–07OCT04

Continued on next page

OUO1082,00002F6 –19–20OCT04–2/5

IMPORTANT: Make sure all O-rings are in place and in good condition before making any hydraulic line connections. Damaged or missing O-rings and seals will leak.

7. Connect differential lubrication line (E), and install clamp (F).

8. Install hydraulic suction line (D).

9. Connect hydraulic supply line (C).

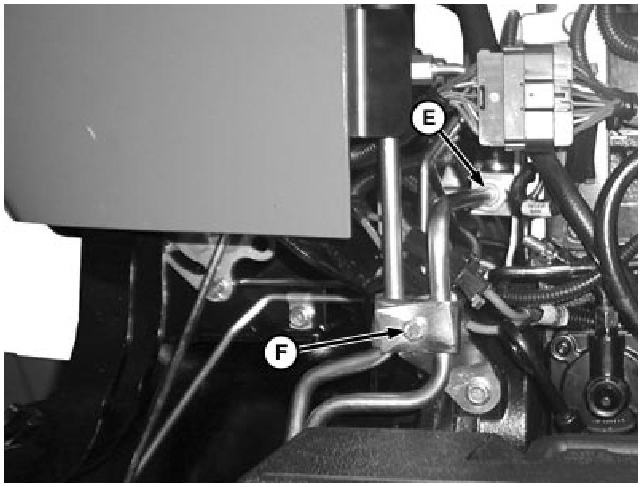
10. Connect brake line (B) and brake valve return line (A).

11. POWRREVERSER™ transmissions: Install hydraulic pressure feed line to right side of transmission and clutch housing.

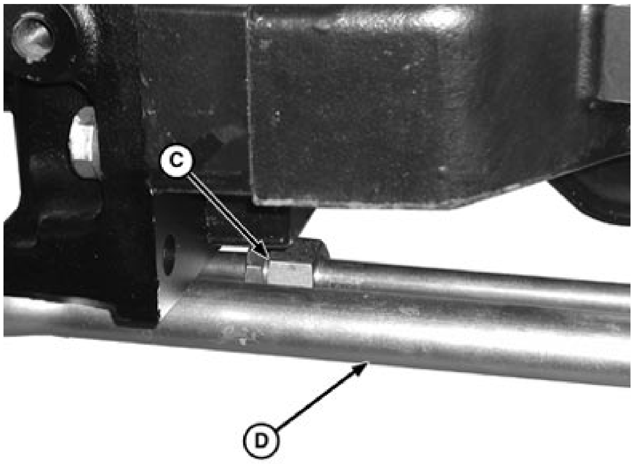
12. POWRREVERSER transmissions: Install MFWD supply line.

13. POWRREVERSER transmissions: If equipped with 540/540E PTO, install throttle contol cable.

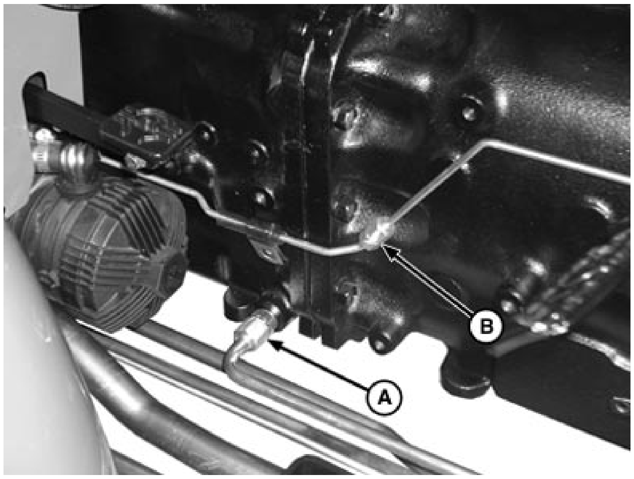
A—Brake Valve Return Line
B—Brake Line
C—Hydraulic Supply Line
D—Hydraulic Suction Line
E—Differential Lubrication Line
F—Clamp



LV10880 –UN–27OCT04



LV10879 –UN–07OCT04



LV10878 –UN–07OCT04

50
15
11

POWRREVERSER is a trademark of Deere & Company

Continued on next page

NOTE: Install new tie straps as necessary.

14. Route wire harness towards back of tractor.

15. Install VEC mounting plate cap screws (D).

16. Connect 7-pin electrical outlet connectors (C).

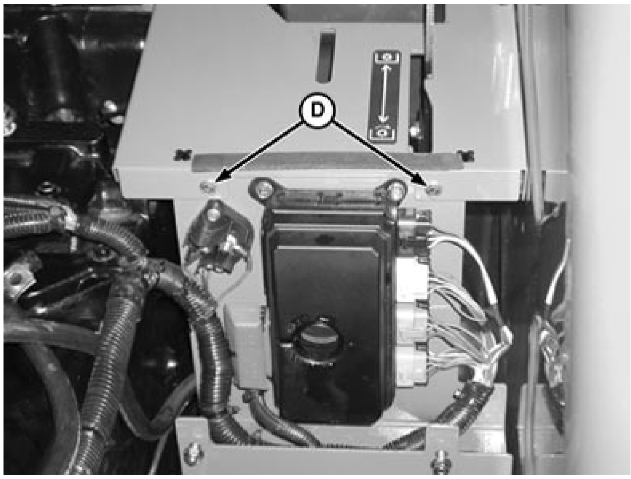
17. Connect neutral safety switch wiring connector.

18. Connect lighting electrical connectors at left and right sides of ROPS base.

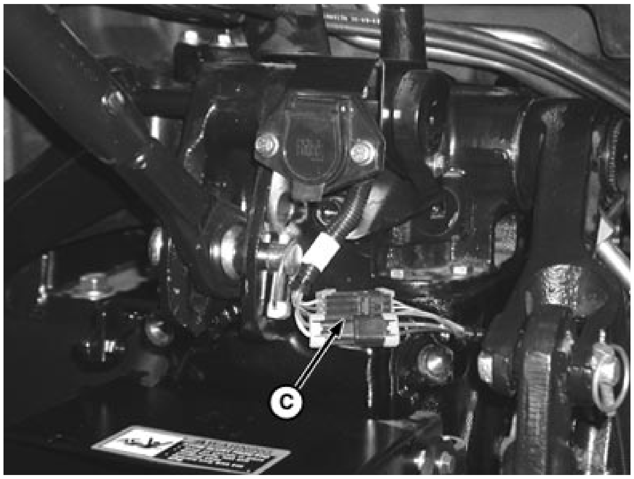
19. Connect PTO switch connector (B).

20. Connect ground wire lead (A) to transmission cover.

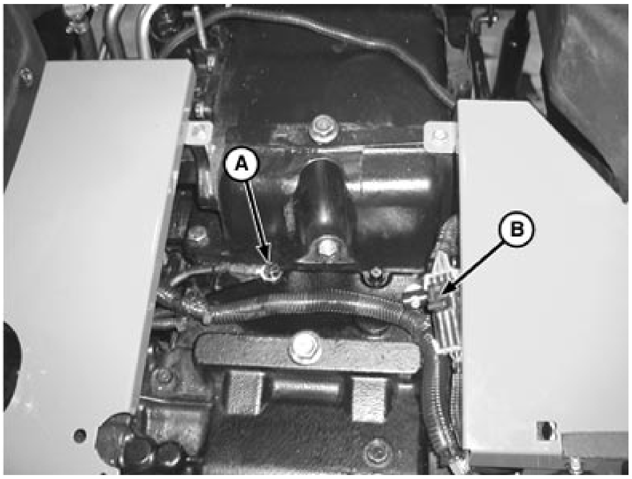
A—Ground Wire Lead
B—PTO Switch Connector
C—7-Pin Electrical Outlet Connectors
D—VEC Mounting Plate Cap Screw (2 used)



LV10877 –UN–07OCT04



LV10876 –UN–06OCT04



LV10875 –UN–06OCT04

Continued on next page

OUO1082,00002F6 –19–20OCT04–4/5

21. Connect fuel supply hose (G) and fuel return hose (F). Remove any device used to pinch off fuel hoses.

22. Connect wire leads (C and D). Install clamp (E).

23. Install foot throttle contol and right-side step plate.

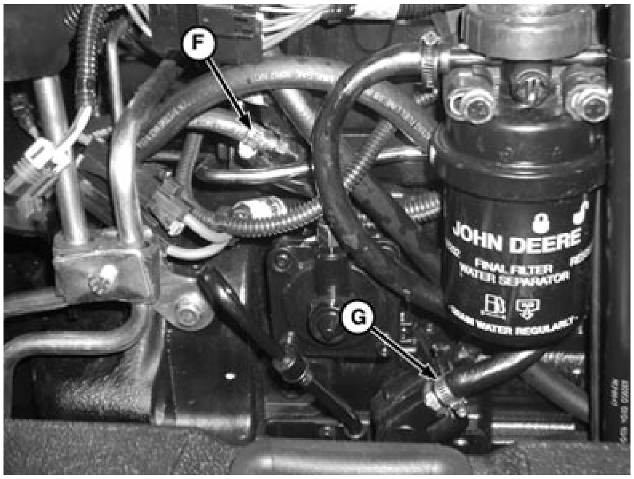
24. Install left-side step plate (B) and center support (A).

25. Install seat and support. (See Remove and Install Seat and Support—Straddle Mount or Remove and Install Seat and Support—Isolated Open Operator Station and Cab Tractors in Section 90, Group 05.)

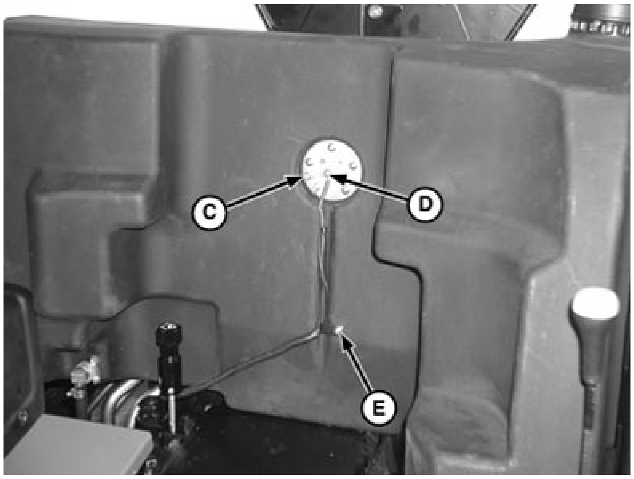
26. Install front weights and weight support, if equipped.

27. Fill transmission with clean transmission/hydraulic oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

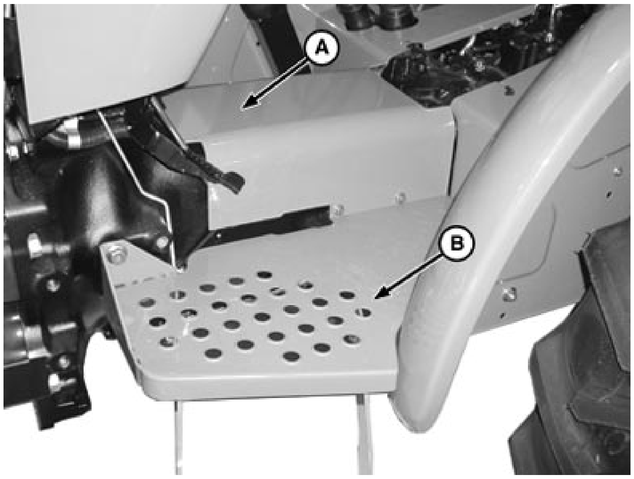
28. Bleed brake system. (See Reference 260-15-009, Bleed Rear Brakes in TM2197 Section 260, Group 15.)



LV10874 –UN–06OCT04



LV10873 –UN–06OCT04



LV10872 –UN–06OCT04

A—Center Support
B—Left-Side Step Plate
C—Wire Lead
D—Wire Lead
E—Clamp
F—Fuel Return Hose
G—Fuel Supply Hose

OUO1082,00002F6 –19–20OCT04–5/5

Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors

1. Cab tractors: Remove cab. (See Remove Cab in Section 90, Group 15.)

2. Isolated open operator station tractors: Remove platform. (See Remove Isolated Open Operator Station in Section 90, Group 16.)

CAUTION: If tractor is equipped with optional front weights, remove weights and weight support before removing any transmission-to-clutch housing mounting hardware.

3. Remove front weights and weight support, if equipped.

4. Drain transmission.

NOTE: Cap or plug all lines to prevent contamination.

5. Disconnect brake valve return line (A) and brake line (B).

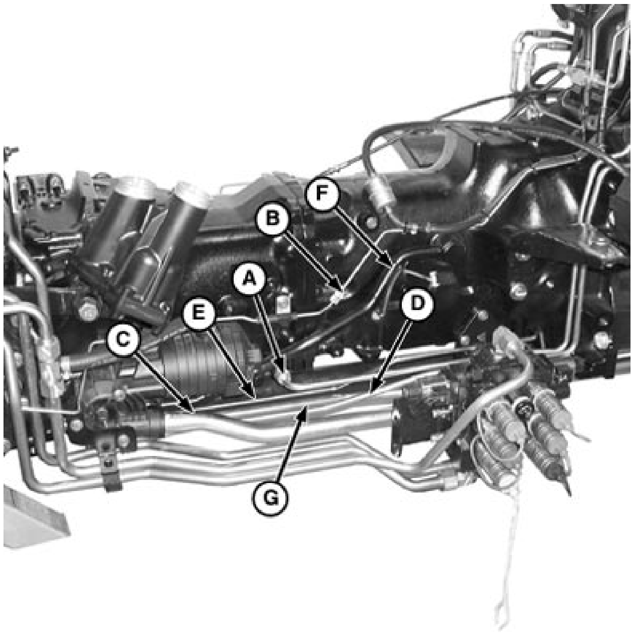
6. Disconnect hydraulic supply line (G), suction line (C) and differential lube line (D).

7. POWRREVERSER™ transmissions: Disconnect POWRREVERSER supply line (F) from clutch housing.

8. Disconnect hydraulic line (E), if equipped.

NOTE: SCV and Mid-Mount lines vary depending on tractor options. Remove or disconnect lines as needed.

9. Disconnect or remove SCV and Mid-Mount lines as needed.



LV10926 –UN–07OCT04

Right Side of Tractor

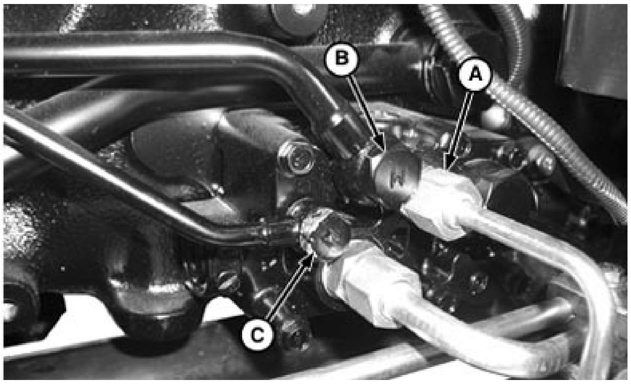
A—Brake Valve Return Line
B—Brake Line
C—Hydraulic Suction Line
D—Differential Lube Line
E—Hydraulic Line (MFWD)
F—Supply Line (POWRREVERSER)
G—Hydraulic Supply Line

POWRREVERSER is a trademark of Deere & Company

Continued on next page

NOTE: Cap or plug all lines to prevent contamination.

10. Disconnect hydraulic lines (A—C), located on right-hand side, if equipped with electo-hydraulic PTO.



A—Hydraulic Line
B—Hydraulic Line
C—Hydraulic Line

OUO6046,000A02A –19–29SEP04–2/3

11. Remove brake line (A).

12. Remove MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

13. Install wood blocks between front axle pivot stops and tractor frame. Block front and back of rear wheels.

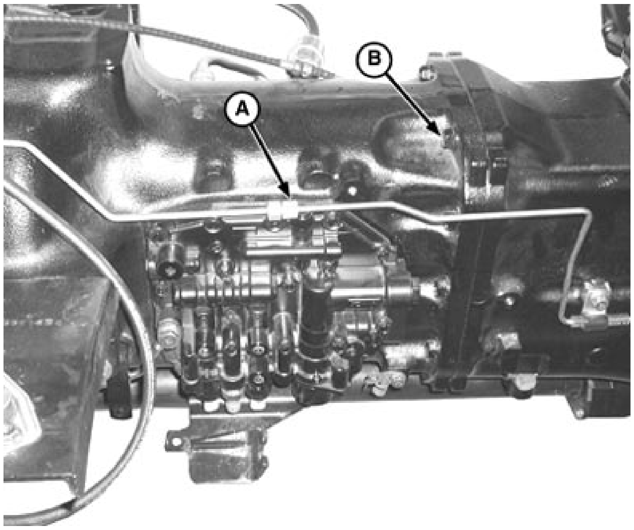
14. Position a floor jack under the transmission and a support stand under end of drawbar.

15. Attach a hoist and lifting chains or strap around clutch housing.

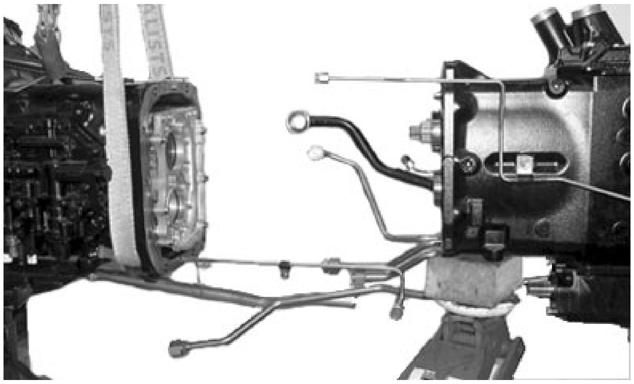
NOTE: When separating, the main outer shaft, gear fork shaft, and driven shaft assemblies must remain in transmission case.

16. Remove clutch housing-to-transmission cap screws (B) and roll front section of tractor (clutch housing) away from rear section (transmission).

17. Install a support stand under clutch housing.



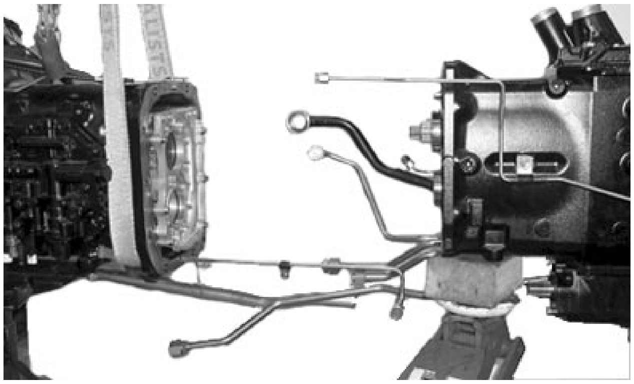
Left Side of Tractor



A—Brake Line
B—Cap Screw

OUO6046,000A02A –19–29SEP04–3/3

Install Clutch Housing to Transmission—Isolated Open Operator Station and Cab Tractors



LV10928 –UN–07OCT04

1. Clean mating surfaces of transmission and clutch housings. Install new gasket.

2. Place range shift lever in neutral and gear shift lever in reverse.

IMPORTANT: Do not draw clutch housing against transmission using cap screws or damage will result. Make sure clutch housing and transmission mating surfaces are completely together before tightening cap screws.

NOTE: *It may be necessary to rotate the clutch shafts and reverse gears during installation so that the clutch and transmission shafts mesh.*

Rotate the PTO shaft by manually turning the PTO at rear of tractor.

Rotate the traction shaft by turning the flywheel using JDE83 (4-Cylinder) or JDG1704 (5-Cylinder) Flywheel Turning Tool.

Verify that the two bearings and two fork shafts enter holes of clutch housing at the same time.

Verify that the two pins enter the holes in transmission housing.

Continued on next page

OUO6046,000A02B –19–29SEP04–1/4

3. Install clutch housing to transmission. Tighten clutch housing-to-transmission cap screws (B) to specification.

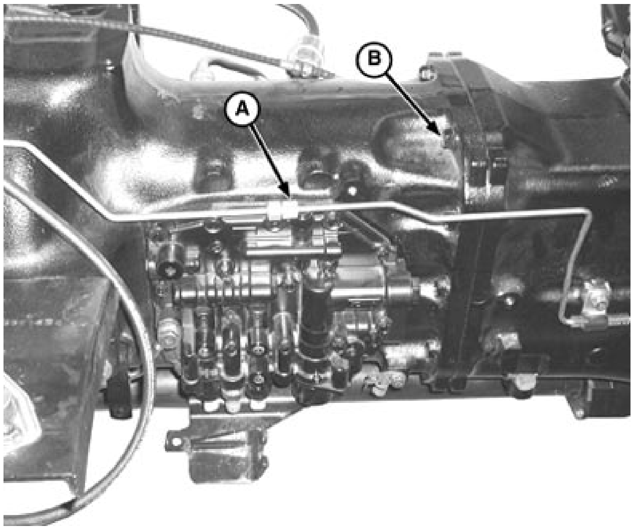
Specification

Clutch Housing-to-Transmission Cap Screw—Torque	140 N•m (105 lb-ft)

4. Install MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

IMPORTANT: Make sure all O-rings are in place and in good condition before making any hydraulic line connections. Damaged or missing O-rings and seals will leak.

5. Connect brake line (A).



LV10927 –UN–07OCT04

A—Brake Line
B—Cap Screw (10 used)

Continued on next page

OUO6046,000A02B –19–29SEP04–2/4

IMPORTANT: Make sure all O-rings are in place and in good condition before making any hydraulic line connections. Damaged or missing O-rings and seals will leak.

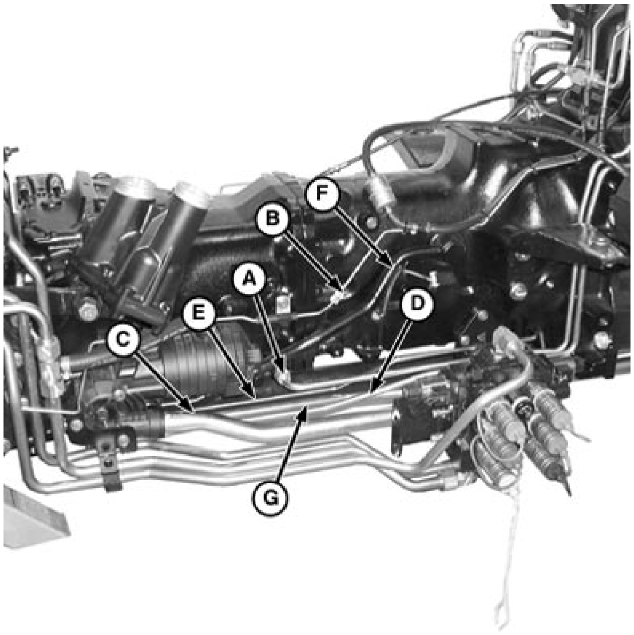
6. Connect brake valve return line (A) and brake line (B).

7. Connect hydraulic supply line (G), suction line (C) and differential lube line (D).

8. POWRREVERSER™ transmissions: Install POWRREVERSER supply line (F) to clutch housing.

9. Install hydraulic line (E), if equipped.

10. Install or connect any SCV or Mid-Mount lines previously removed or disconnected. (See SCV line routings in Section 70, Group 15 or Mid-Mount line routings in Section 70, Group 20.)



LV10926 –UN–07OCT04

Right Side of Tractor

A—Brake Valve Return Line
B—Brake Line
C—Suction Line
D—Differential Lube Line
E—Hydraulic Line (MFWD)
F—Supply Line (POWRREVERSER)
G—Hydraulic Supply Line

POWRREVERSER is a trademark of Deere & Company

Continued on next page

OUO6046,000A02B –19–29SEP04–3/4

11. Connect hydraulic lines (A—C) if equipped with an electro-hydraulic PTO.

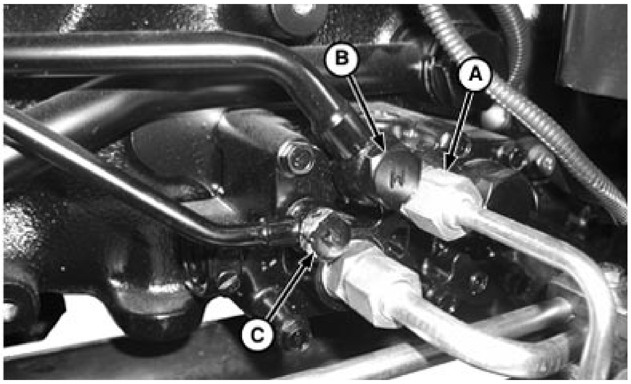
12. Fill transmission with clean transmission/hydraulic oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

13. Isolated open operator station tractors: Install platform. (See Install Isolated Open Operator Station in Section 90, Group 16.)

14. Cab tractors: Install cab. (See Install Cab in Section 90, Group 15.)

15. Install front weights and weight support, if equipped.

16. Bleed brake system. (See Reference 260-15-009, Bleed Rear Brakes in TM2197 Section 260, Group 15.)

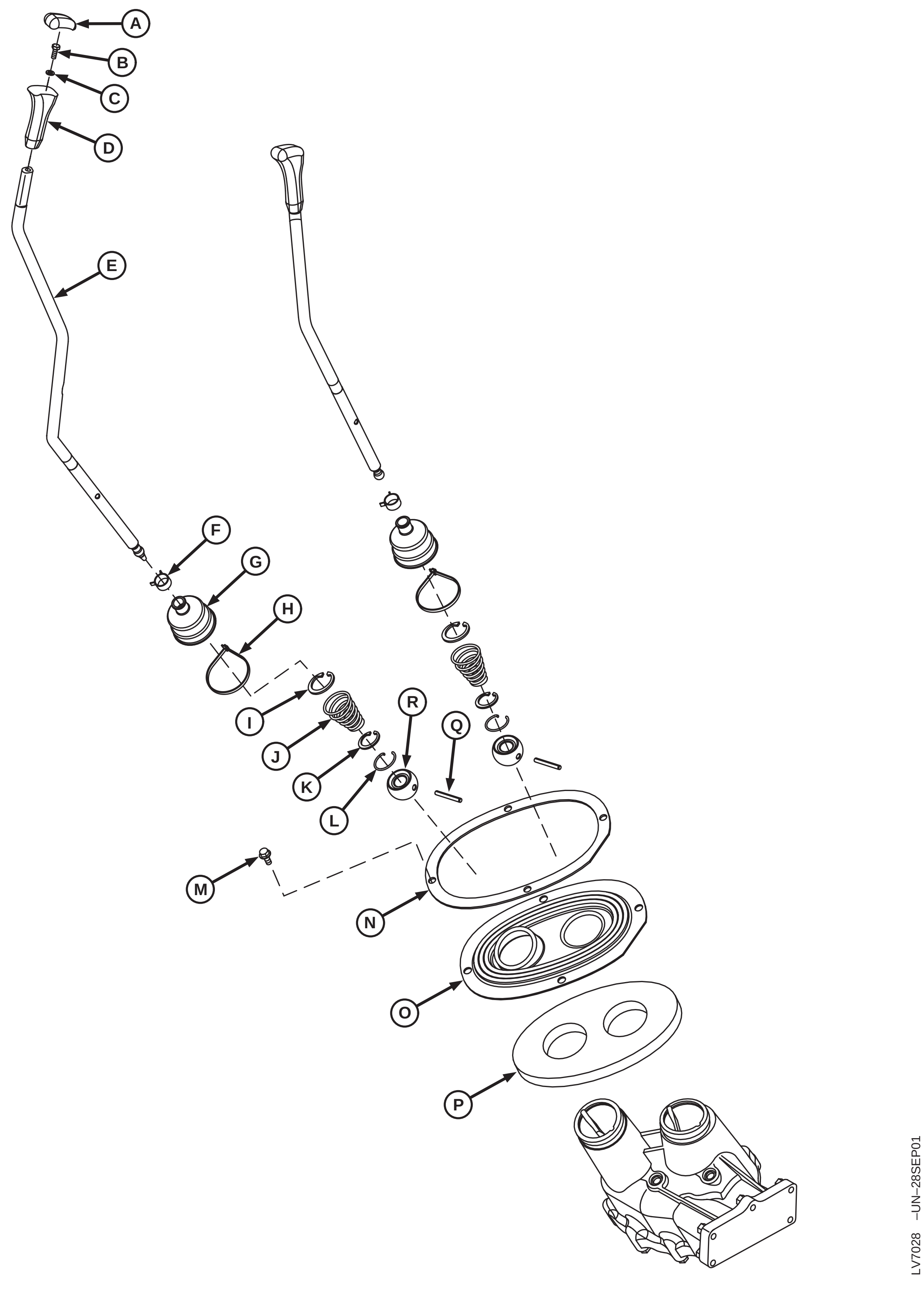


LV10949 –UN–07OCT04

A—Hydraulic Line
B—Hydraulic Line
C—Hydraulic Line

OUO6046,000A02B –19–29SEP04–4/4

Inspect and Repair Gear and Range Shift Levers


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
LV7028 –UN–28SEP01

Continued on next page

A—Cap
B—Cap Screw
C—Washer
D—Knob
E—Gearshift Lever
F—Spring Clip
G—Rubber Boot
H—Nylon Tie
I—Internal Snap Ring
J—Spring
K—Internal Snap Ring
L—Retaining Ring
M—Cap Screw (4 used)
N—Retaining Ring
O—Rubber Boot
P—Seal
Q—Pin
R—Ball

NOTE: Parts (M—P) are used on isolated open operator station and cab tractors only.

Seal (P) is fastened to bottom side of floor plate

1. Isolated open operator station and cab tractors: Remove parts (M—O).

2. Remove parts (A—D).

3. Remove parts (F—L).

4. Remove gearshift lever (E).

5. Repeat steps 2—4 for range shift lever.

6. Inspect all parts for wear or damage. Replace as necessary.

7. Apply multipurpose grease to ball near end of shift levers.

8. Install all parts.

OUO1082,00002F5 –19–19OCT04–2/2

Remove Transmission

LV10961 –UN–07OCT04

1. Separate clutch housing from transmission. (See Separate Clutch Housing from Transmission—Straddle Mount or Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)

2. Straddle mount tractors: Remove right- and left-side control console. (See Remove and Install Right-Side Control Console—Straddle Mount and Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.)

3. Straddle mount tractors: Remove left-side fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

4. Straddle mount tractors: Remove Mid-Mount joystick and cable assembly, if equipped. (See Inspect and Repair Joystick and Linkage in Section 70, Group 20.)

NOTE: Close all openings using caps and plugs.

5. Straddle mount tractors: Remove 540/540E lever and linkage, if equipped. (See Inspect and Repair PTO 540/540E Shift Lever and Linkage—Straddle Mount in Section 50, Group 20.)

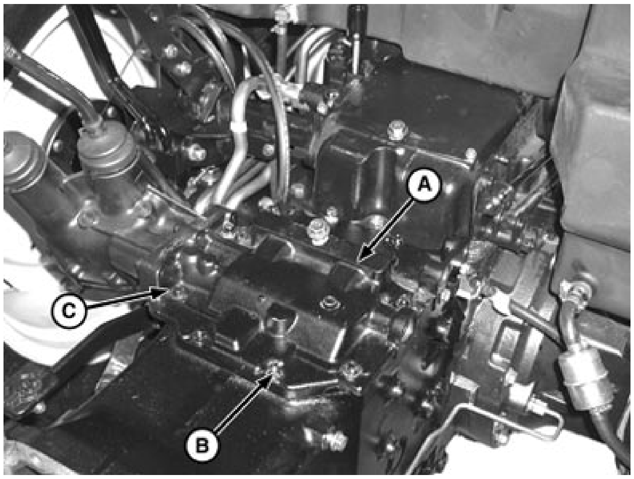
6. Straddle mount tractors: Remove PTO lever and linkage. (See Remove, Inspect and Install Rear PTO Lever and Linkage—Straddle Mount in Section 50, Group 20.)

Continued on next page

JG31785,00000CC –19–01OCT04–1/5

7. Remove cap screws (C), nuts (B) and cover (A). Repair housing if necessary. (See Disassemble and Inspect Transmission in Section 50, Group 15.)

A—Transmission Cover
B—Nut (2 used)
C—Cap Screw (8 used)



LV10962 –UN–07OCT04

JG31785,00000CC –19–01OCT04–2/5

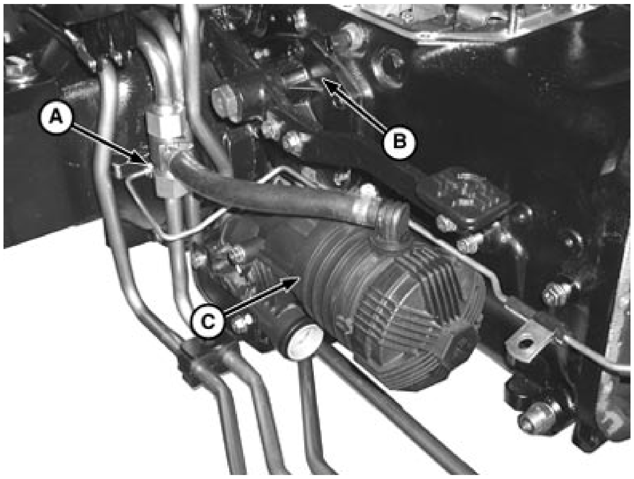
8. Remove right-side brake line (A).

9. Remove side cover (B) or creeper assembly, if equipped. (See Remove and Install Creeper Assembly in Section 50, Group 40.)

10. Remove hydraulic oil filter assembly (C). (See Remove and Install Hydraulic Oil Filter/Manifold in Section 70, Group 05.)

11. Remove lower cover or MFWD drop gearbox, if equipped. (See Remove and Install MFWD Drop Gearbox in Section 50, Group 35.)

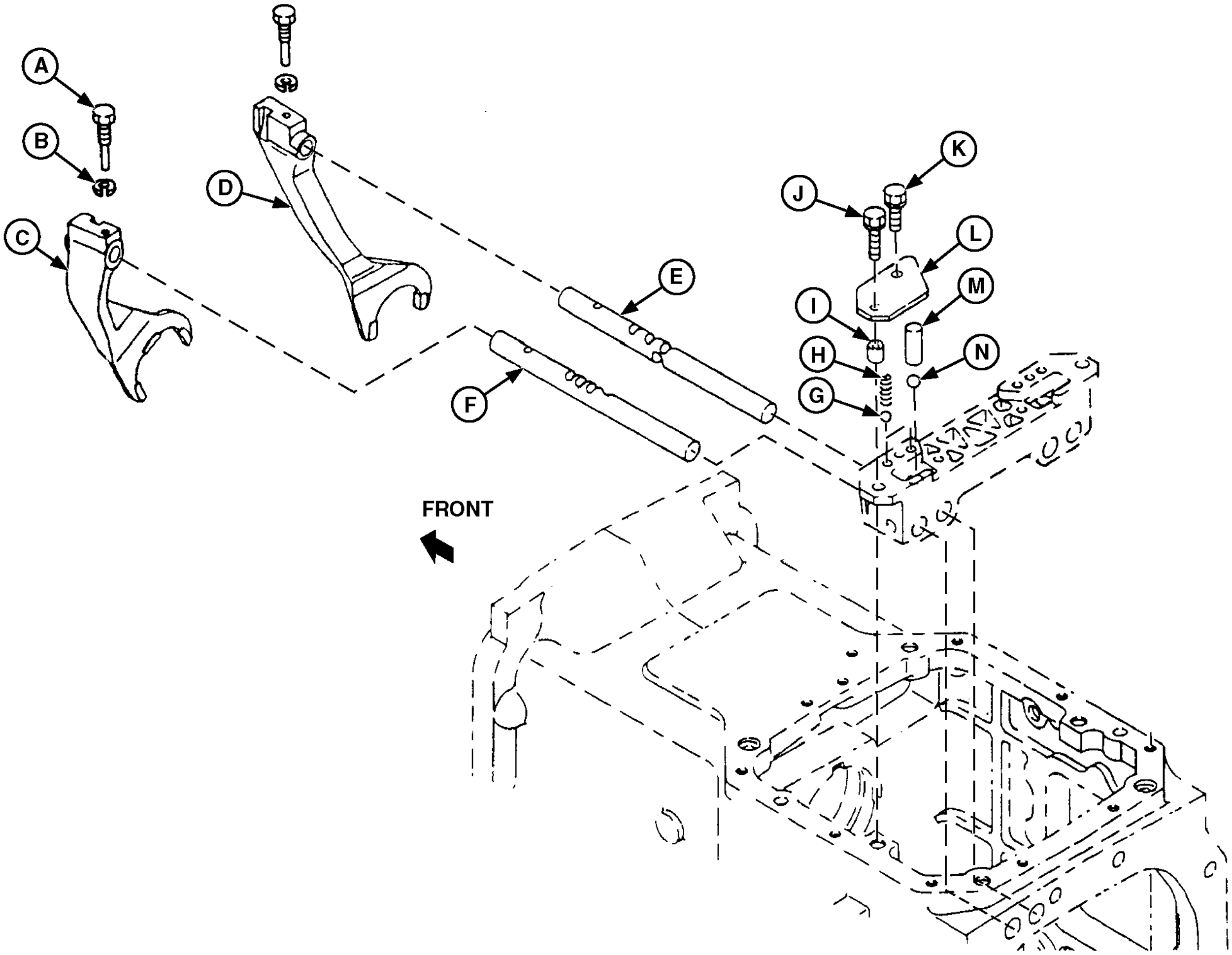
A—Right-Side Brake Line
B—Side Cover
C—Hydraulic Oil Filter Assembly



LV10963 –UN–07OCT04

Continued on next page

JG31785,00000CC –19–01OCT04–3/5



Range Shift Shaft Assembly

A—Cap Screw (2 used)
B—Lock Washer (2 used)
C—B and C Range Shift Fork
D—A Range and Creeper Shift Fork
E—A Range and Creeper Shift Shaft
F—B and C Range Shift Shaft
G—Ball (2 used)
H—Spring (2 used)
I—Bushing
J—Cap Screw
K—Cap Screw
L—Plate
M—Pin
N—Ball

12. Remove parts (G—N).

13. Remove cap screws (A) and lock washers (B). Remove range shift shafts (E and F) by sliding them forward out of the transmission housing.

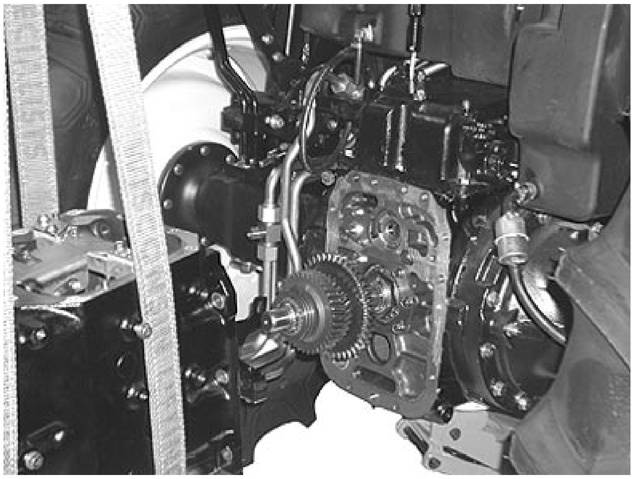
14. Remove shift fork (C).

15. Remove shift fork (D).

Continued on next page

JG31785,00000CC –19–01OCT04–4/5

IMPORTANT: Before separating the transmission from rear differential housing, rotate park pawl until it rests against the park arm inside of transmission housing. If park pawl is not rotated, damage to gears may result when transmission is separated from the rear differential housing.


LV10964 –UN–07OCT04

16. Rotate park pawl fully outward to side of transmission case.

17. Position a jack stand under drawbar assembly.

18. Attach hoist and chains to transmission housing.

19. Remove PTO shaft.

NOTE: Differential drive shaft and gear cluster assembly will stay with the differential during transmission removal.

20. Remove twelve cap screws retaining transmission to differential housing. Remove transmission.

21. Make repairs as necessary. (See procedures in Section 50, Group 15.)

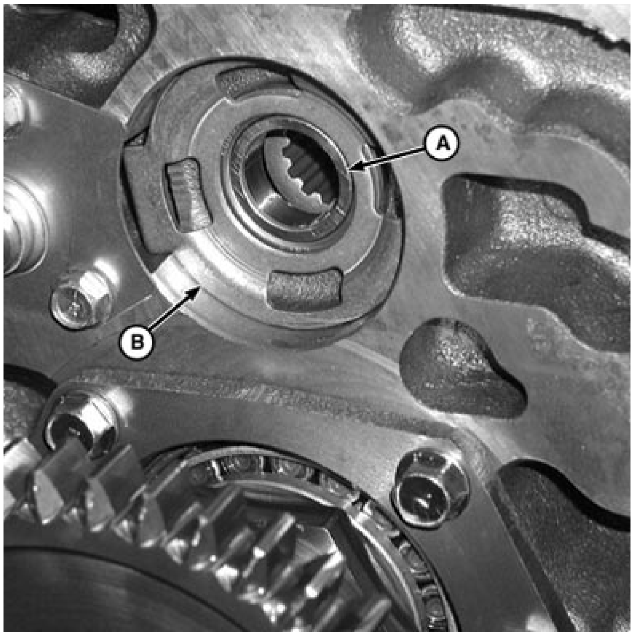
JG31785,00000CC –19–01OCT04–5/5

Disassemble and Inspect Transmission

1. Remove oil deflector (B) and bearing (A) from differential housing.

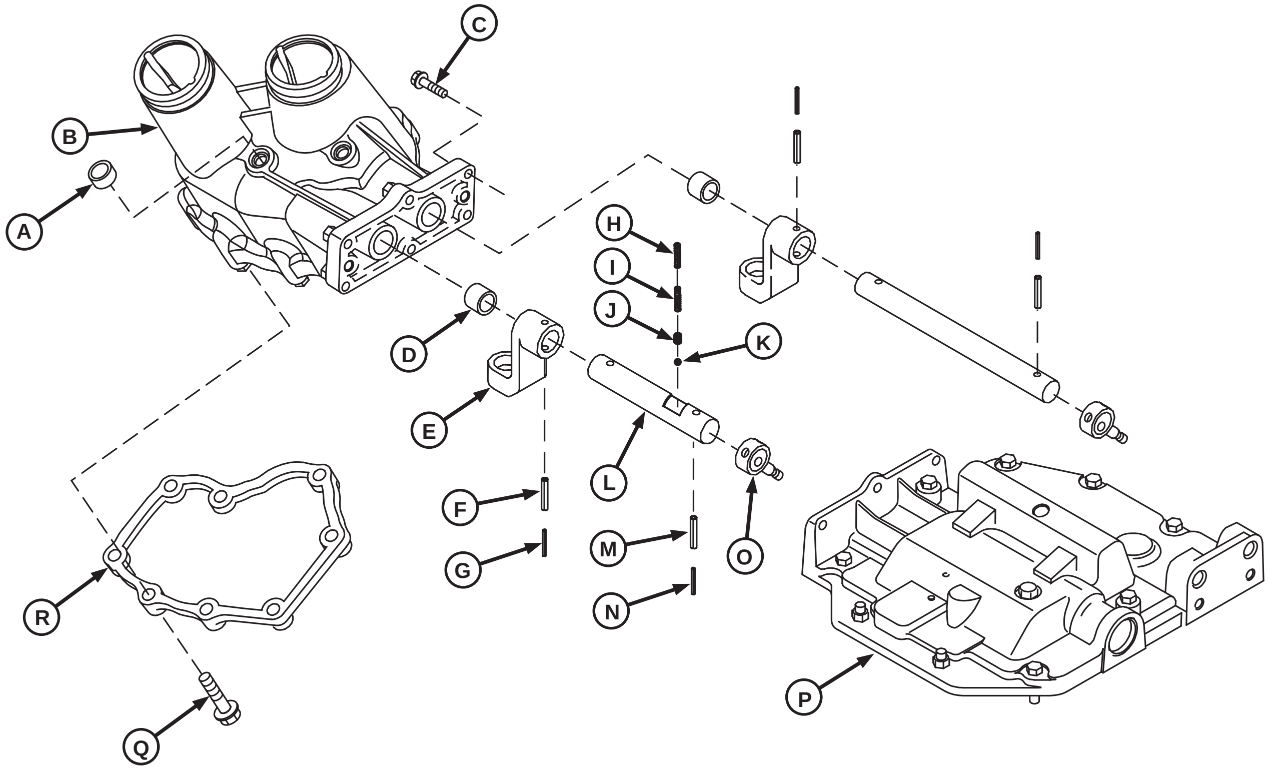
2. Inspect parts for wear or damage. Replace if necessary.

A—Bearing
B—Oil Deflector



LV10670 –UN–22SEP04

Continued on next page OUO1082,00002F7 –19–20OCT04–1/8



LV7346 –UN–13JUL01

A—Plug (2 used)
B—Shift Lever Housing
C—Cap Screw (6 used)
D—Bushing (2 used)
E—Shift Lever (2 used)
F—Spring Pin (2 used)
G—Spring Pin (2 used)
H—Spring
I—Spring
J—Spring
K—Ball
L—Shift Shaft
M—Spring Pin
N—Spring Pin
O—Shift Arm
P—Transmission Cover
Q—Cap Screw (8 used)
R—Shift Lever Housing Cover

3. Remove plugs (A), cap screws (Q) and shift lever housing cover (R).

4. Remove pins (F and G) through plug holes.

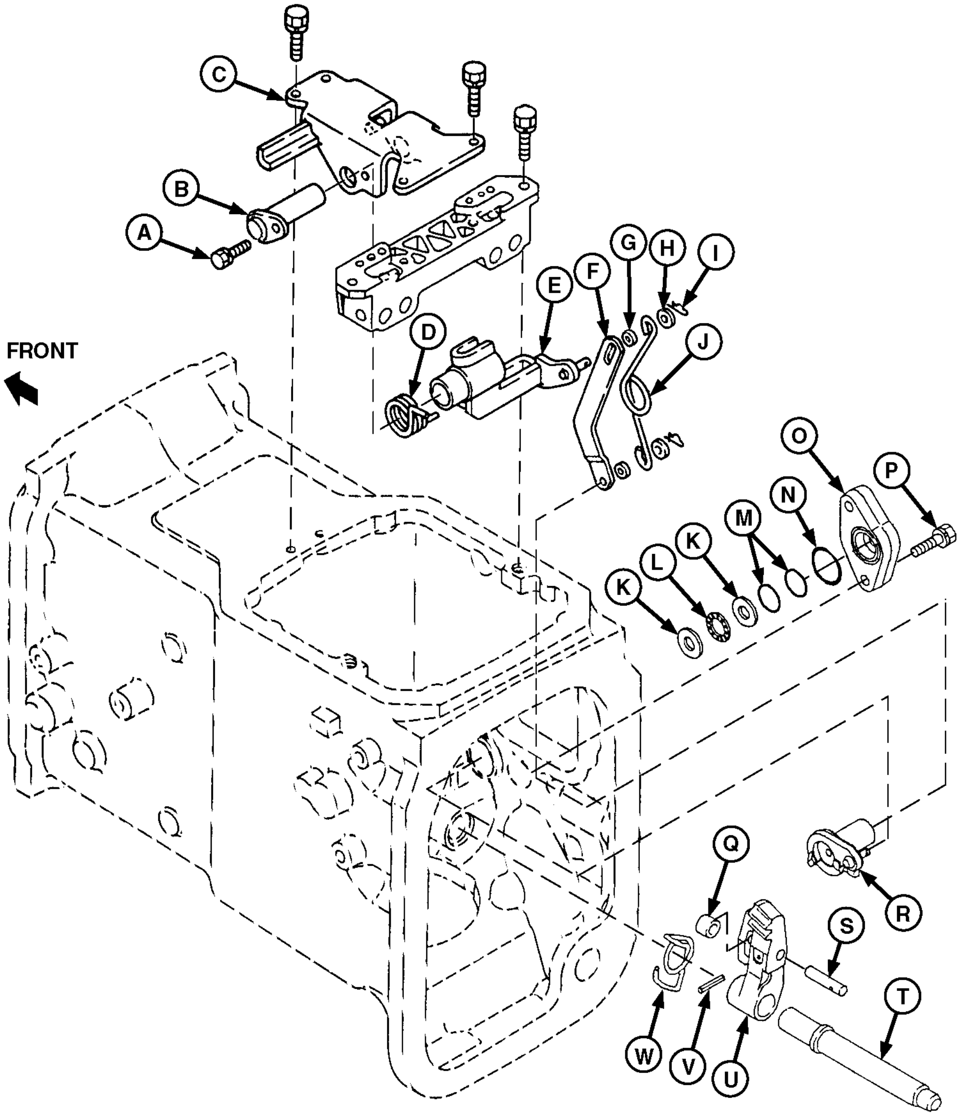
5. Remove shift levers (E), cap screws (C) and shift lever housing (B).

6. Inspect parts for wear or damage. Replace as necessary.

NOTE: Bushings (D) are a press fit in shift lever housing (B). Remove bushings only if replacement is necessary.

7. Replace bushings (D) using a bushing, bearing, and seal driver set.

Continued on next page



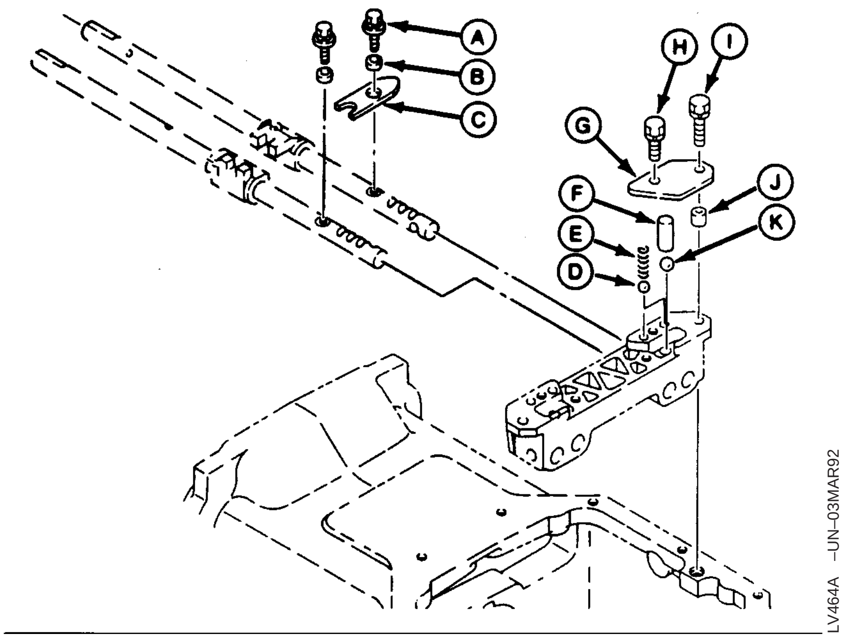
Park Pawl Assembly

A—Cap Screw (5 used)
B—Shaft
C—Guide
D—Spring
E—Arm
F—Link
G—Bushing (2 used)
H—Washer (2 used)
I—Spring Locking Pin (2 used)
J—Spring
K—Washer
L—Needle Bearing
M—Shim
N—O-Ring
O—Park Pawl Cover
P—Cap Screw (2 used)
Q—Roller
R—Cam
S—Pin
T—Park Shaft
U—Park Pawl
V—Pin
W—Spring

8. Remove parts (A—W).

9. Inspect parts for wear or damage. Replace as necessary.

Continued on next page



A—Cap Screw (2 used)
B—Bushing (2 used)
C—Arm
D—Ball (2 used)
E—Spring (2 used)
F—Pin
G—Plate
H—Cap Screw
I—Cap Screw
J—Bushing
K—Ball

10. Remove parts (A—K).

NOTE: Reinstall bushing (J) and cap screw (I) to ease removal of gear shift/shaft assembly.

11. Install bushing (J) and cap screw (I).

12. Inspect parts for wear or damage. Replace as necessary.

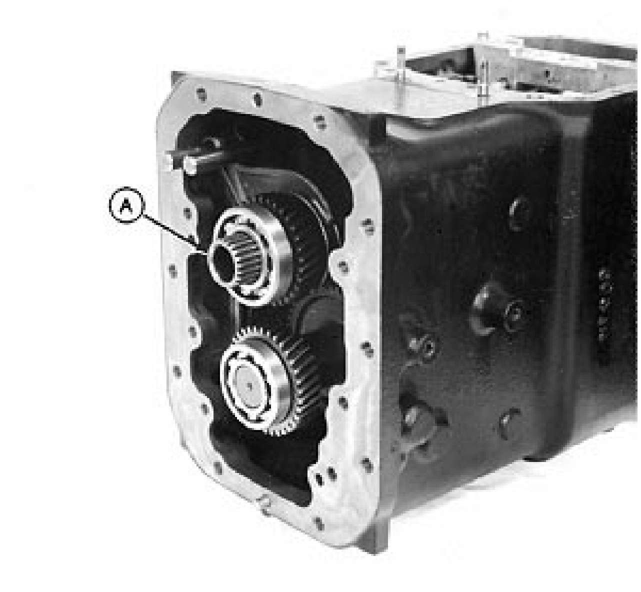
OUO1082,00002F7 –19–20OCT04–4/8

NOTE: To aid in removal, note position of shifter shafts on top shaft and secure shifter shafts to top shaft with wire.

13. Remove transmission top shaft (A) with reverse and 2nd gear shift shaft assembly and 1st and 3rd gear shift shaft assembly.

14. Disassemble and inspect parts as necessary. (See Disassemble, Inspect, and Assemble Transmission Top Shaft—SYNCSHUTTLE™ Transmission and Disassemble, Inspect and Assemble Gearshift Shaft Assemblies in Section 50, Group 15.)

A—Transmission Top Shaft



Continued on next page

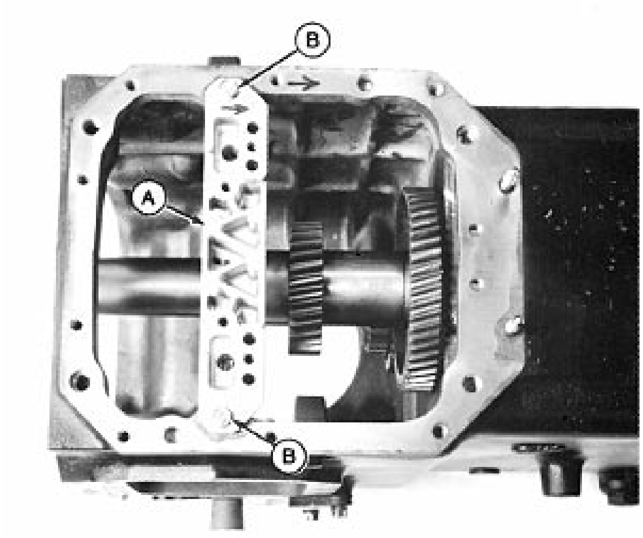
OUO1082,00002F7 –19–20OCT04–5/8

15. Mark support (A) and transmission case to aid in installation.

16. Remove cap screws and bushings (B), and support (A).

17. Inspect parts for wear or damage. Replace as necessary.

A—Support
B—Bushing

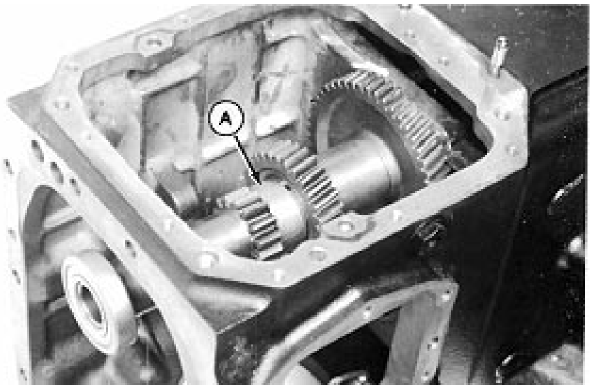


OUO1082,00002F7 –19–20OCT04–6/8

18. Remove range reduction shaft (A).

19. Disassemble and inspect parts as necessary. (See Disassemble, Inspect, and Assemble Range Reduction Shaft in Section 50, Group 15.)

A—Range Reduction Shaft



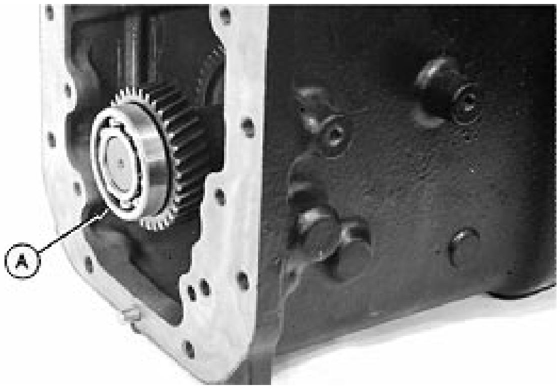
OUO1082,00002F7 –19–20OCT04–7/8

20. Remove driven shaft (A).

21. Disassemble and inspect parts as necessary. (See Disassemble, Inspect and Assemble Driven Shaft in Section 50, Group 15.)

22. Inspect transmission case for cracks or damage. Replace if necessary.

A—Driven Shaft



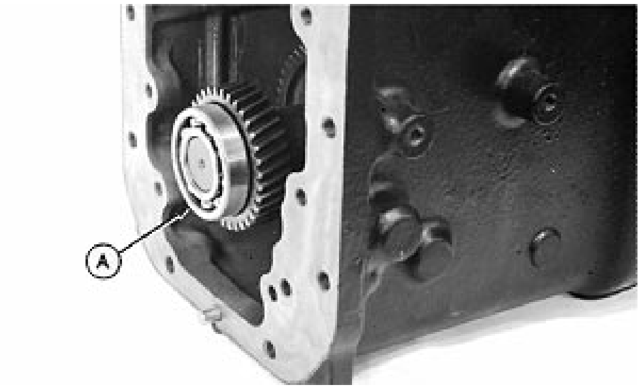
OUO1082,00002F7 –19–20OCT04–8/8

Assemble Transmission

NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

IMPORTANT: Use new seals and O-rings during assembly. Damaged or used seals or O-rings will leak.

1. Install driven shaft (A). Tap on end of shaft with a soft-faced hammer to fully seat shaft in case bore.

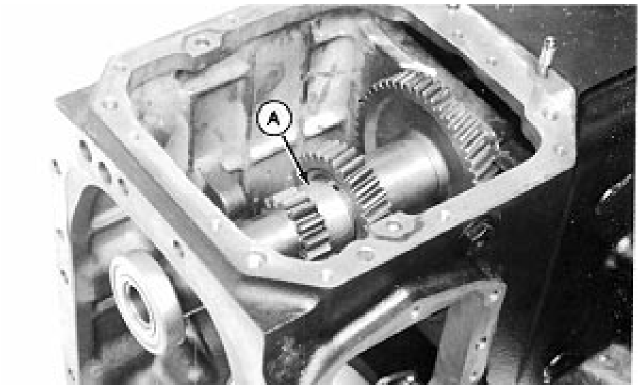


LV473 –UN–03MAR92

A—Driven Shaft

OUO1082,00002F8 –19–20OCT04–1/8

2. Install range reduction shaft (A).

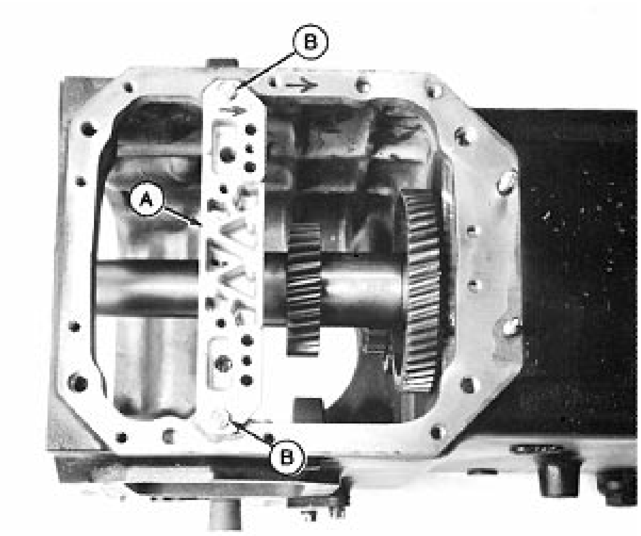


LV471 –UN–03MAR92

A—Range Reduction Shaft

OUO1082,00002F8 –19–20OCT04–2/8

3. Align support (A) with transmission case with marks made inside during disassembly.
4. Install bushings and cap screws (B).



LV470 –UN–03MAR92

A—Support
B—Cap Screw

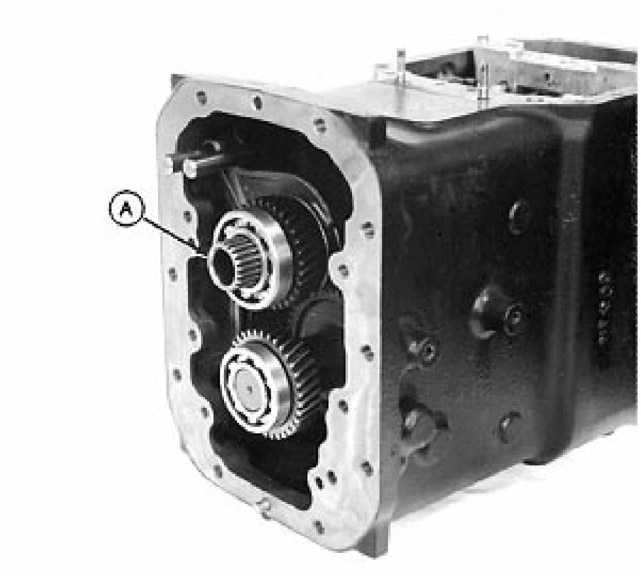
Continued on next page

OUO1082,00002F8 –19–20OCT04–3/8

NOTE: To aid in installation, secure shifter shafts to transmission top shaft with wire.

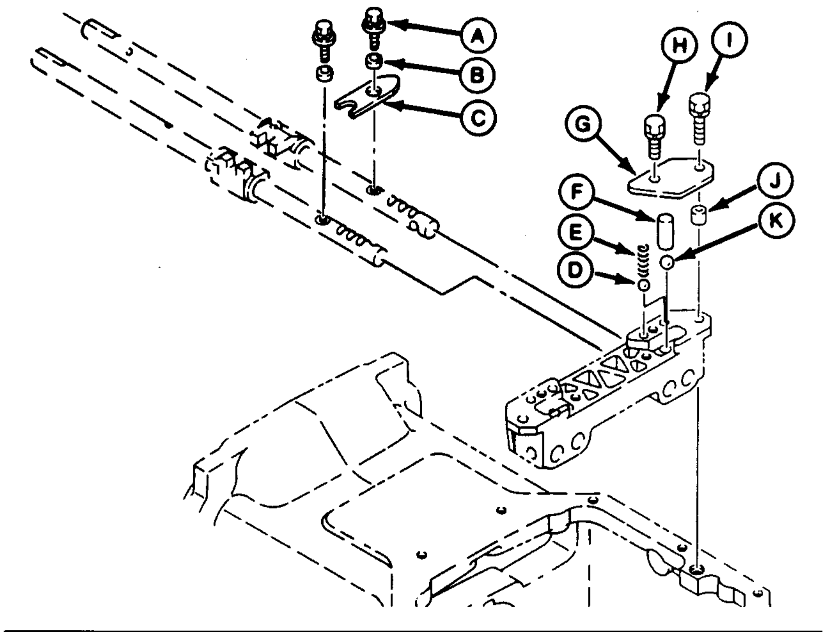
5. Install transmission top shaft (A) with reverse and 2nd gear shaft assembly and 1st and 3rd gear shaft assembly.

A—Transmission Top Shaft



LV467 –UN–03MAR92

OUO1082,00002F8 –19–20OCT04–4/8



LV464A –UN–03MAR92

A—Cap Screw (2 used)	**D—Ball (2 used)**	**G—Plate**	**J—Bushing**
B—Bushing (2 used)	**E—Spring (2 used)**	**H—Cap Screw**	**K—Ball**
C—Arm	**F—Pin**	**I—Cap Screw**	

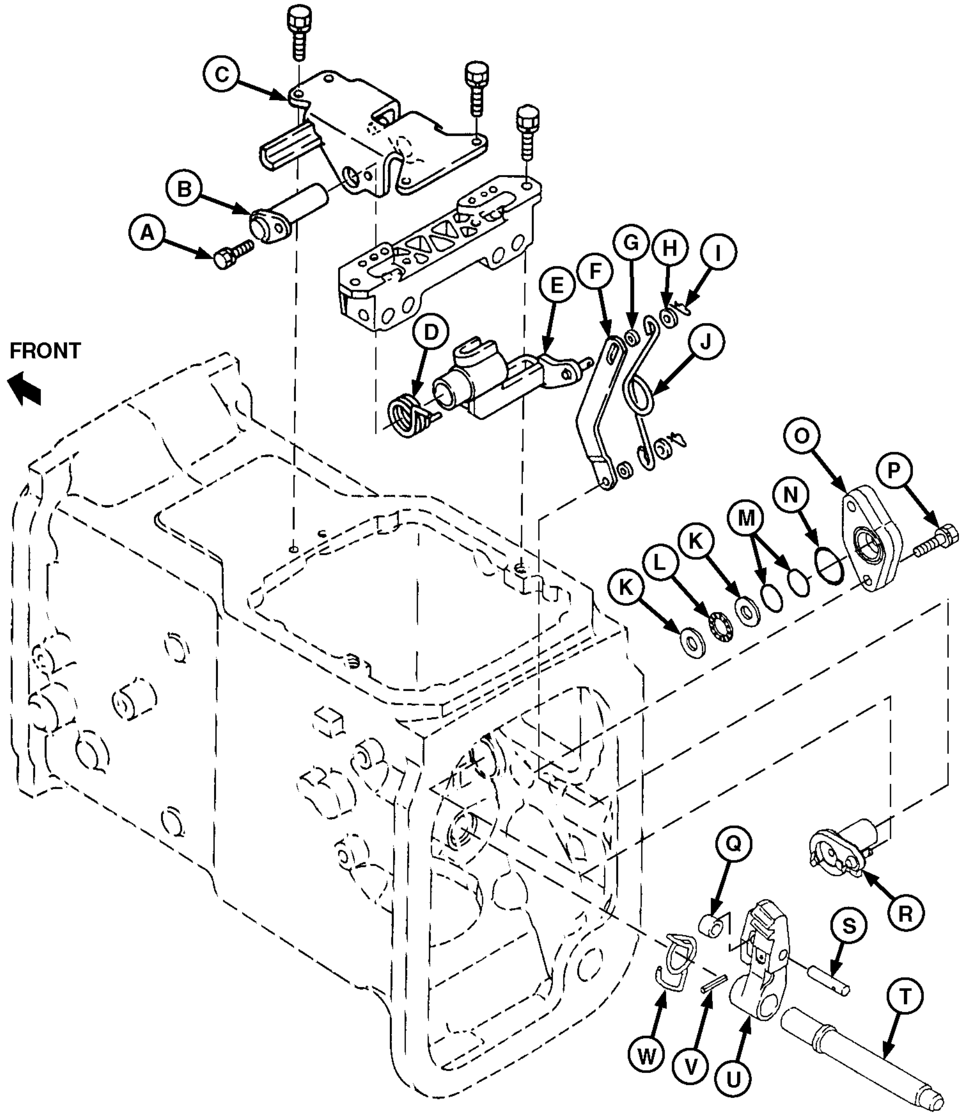
6. Remove cap screw (I).

7. Install parts (A—H), (J) and (K).

8. Install cap screw (I).

Continued on next page

OUO1082,00002F8 –19–20OCT04–5/8



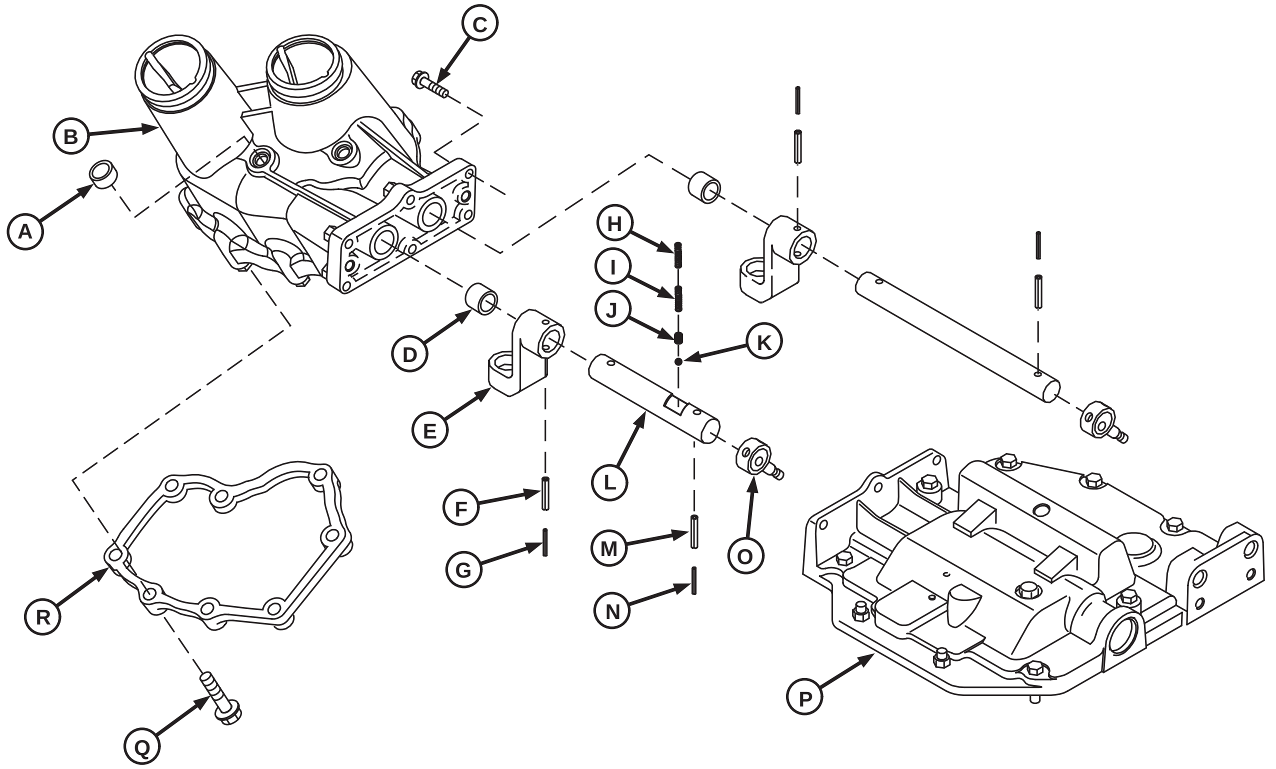
Park Pawl Assembly

A—Cap Screw (5 used)
B—Shaft
C—Guide
D—Spring
E—Arm
F—Link
G—Bushing (2used)
H—Washer (2 used)
I—Spring Locking Pin (2 used)
J—Spring
K—Washer
L—Needle Bearing
M—Shim
N—O-Ring
O—Park Pawl Cover
P—Cap Screw (2 used)
Q—Roller
R—Cam
S—Pin
T—Park Shaft
U—Park Pawl
V—Pin
W—Spring

NOTE: Parts (K—O) will be installed later.

9. Install parts (A—J) and (P—W).

Continued on next page



A—Plug (2 used)
B—Shift Lever Housing
C—Cap Screw (6 used)
D—Bushing (2 used)
E—Shift Lever (2 used)
F—Spring Pin (2 used)
G—Spring Pin (2 used)
H—Spring
I—Spring
J—Spring
K—Ball
L—Shift Shaft
M—Spring Pin
N—Spring Pin
O—Shift Arm
P—Transmission Cover
Q—Cap Screw (8 used)
R—Shift Lever Housing Cover

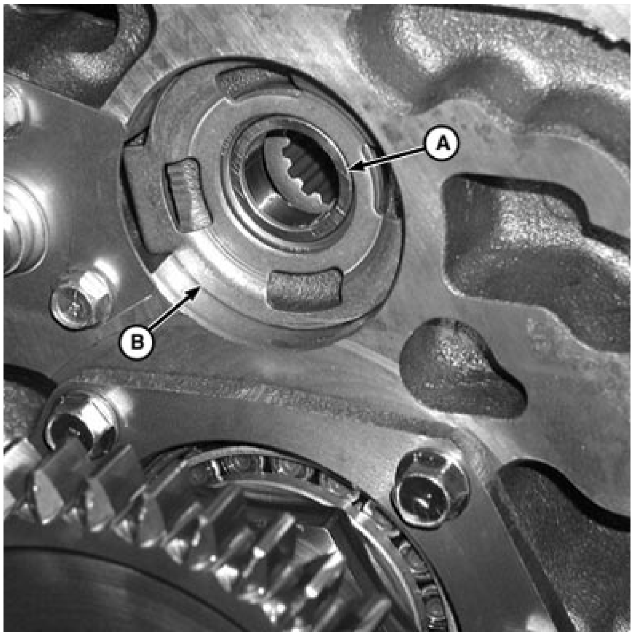
10. Apply PM38656 Form-in-Place Gasket or equivalent sealer to shift lever housing (B) and install housing to transmission cover (P).
11. Install cap screws (C) and shift levers (E).
12. Install pins (F and G).
13. Install shift lever housing cover (R) to shift lever housing (B) using PM38656 Form-in-Place Gasket or equivalent sealer.
14. Install cap screws (Q) and plugs (A).

Continued on next page

NOTE: Make sure bearing (A) and oil deflector (B) are installed as shown.

15. Install bearing (A) and oil deflector (B) to differential housing.

A—Bearing
B—Oil Deflector



LV10670 –UN–22SEP04

OUO1082,00002F8 –19–20OCT04–8/8

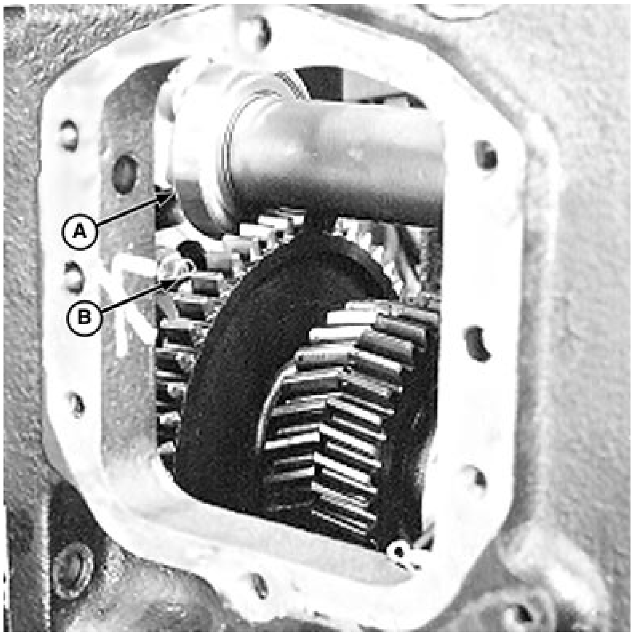
Install Transmission

1. Clean mating surfaces of transmission and differential housings. Apply Loctite 515 to mating surfaces.

NOTE: It may be necessary to rotate the transmission shafts during installation of transmission.

2. Position transmission approximately 127 mm (5 in.) from the differential case so bearing (A) is just past sliding gear (B).

A—Bearing
B—A Range and Creeper Shift Sliding Gear



LV11097 –UN–07OCT04

Continued on next page

JG31785,00000CD –19–08OCT04–1/11

3. Install transmission. Ensure park pawl shaft (A) aligns with bore in differential case. Push park pawl (C) inward after clearing gear (B).

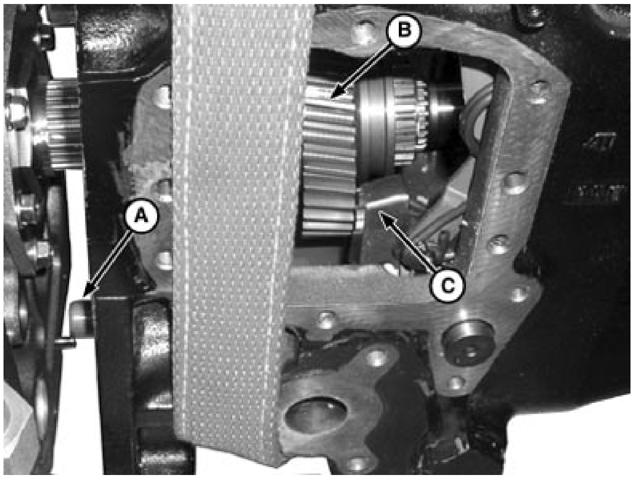
IMPORTANT: Do not draw transmission against differential housing using cap screws or damage will result. Make sure transmission and differential housing mating surfaces are completely together before tightening cap screws.

4. Install transmission to differential housing with cap screws. Tighten to specification.

Specification

Transmission-to-Differential Cap Screw—Torque.. 140 N•m (105 lb-ft)

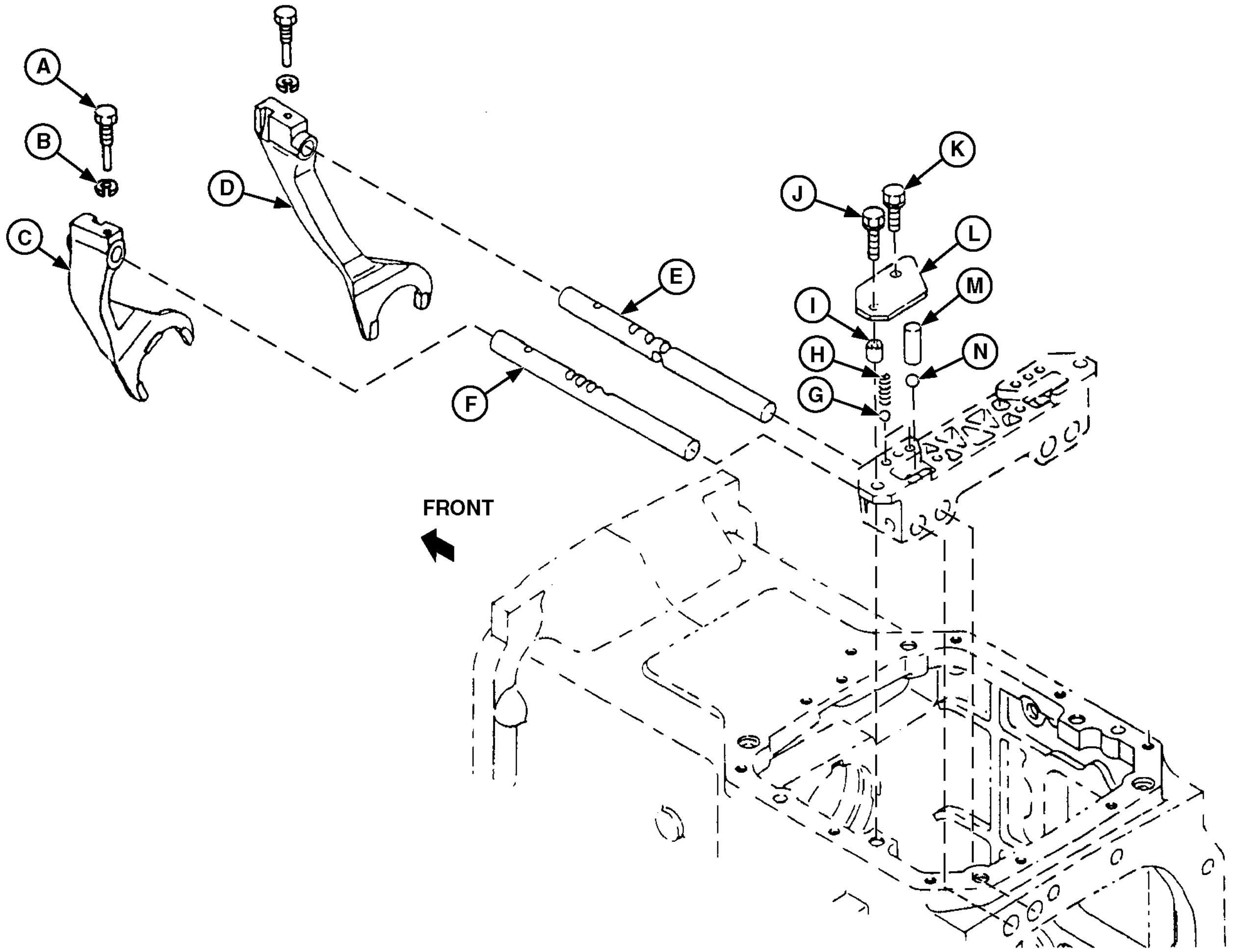
A—Park Pawl Shaft
B—Gear
C—Park Pawl



LV11129 –UN–14OCT04

Continued on next page

JG31785,00000CD –19–08OCT04–2/11



Range Shift Shaft Assembly

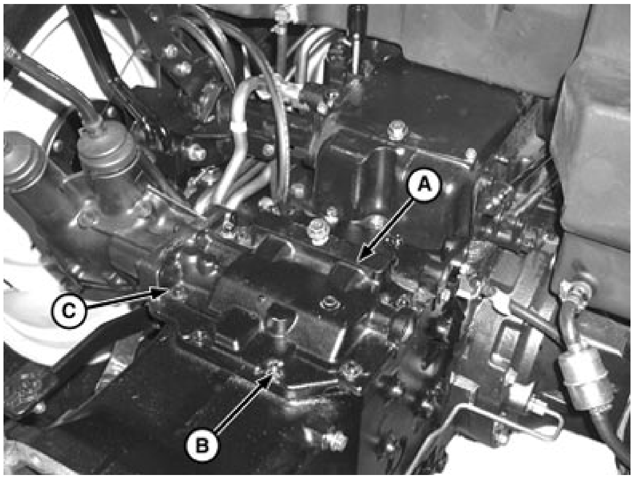
A—Cap Screw (2 used)
B—Lock Washer (2 used)
C—B and C Range Shift Fork
D—A Range and Creeper Shift Fork
E—A Range and Creeper Shift Shaft
F—B and C Range Shift Shaft
G—Ball (2 used)
H—Spring (2 used)
I—Bushing
J—Cap Screw
K—Cap Screw
L—Plate
M—Pin
N—Ball

5. Remove cap screw (J), if installed.
6. Install A range and creeper shift fork (D).
7. Install B and C range shift fork (C).
8. Slide shift shafts (F and E) into position.
9. Clean cap screws (A) with Cure Primer. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws. Install lock washers (B) and cap screws (A).
10. Install parts (G—N).

Continued on next page

11. Install transmission cover (A). Make sure shift arms are set in range and gear shift forks properly. Install cap screws (C) and nuts (B).

A—Transmission Cover
B—Nut (2 used)
C—Cap Screw (8 used)



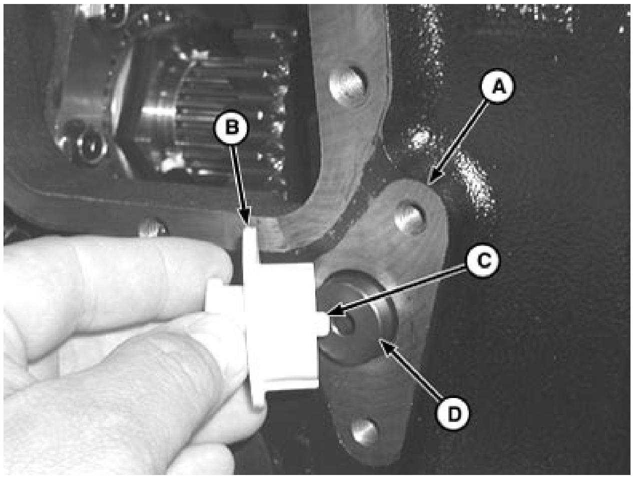
LV10962 –UN–07OCT04

JG31785,00000CD –19–08OCT04–4/11

NOTE: Make sure machined surface (A) is clean to achieve proper measurement.

12. Position RE188114 Park Cam Shim Gauge (B) over cam shaft (D) with pin (C) inserted in center hole of cam shaft.

A—Machined Surface
B—Park Cam Shim Gauge
C—Pin
D—Cam Shaft



LV10667 –UN–22SEP04

Continued on next page

JG31785,00000CD –19–08OCT04–5/11

13. Hold shim gauge in position and apply inward force in center of gauge (C) using a tool with a flat or blunt end as shown in photo.

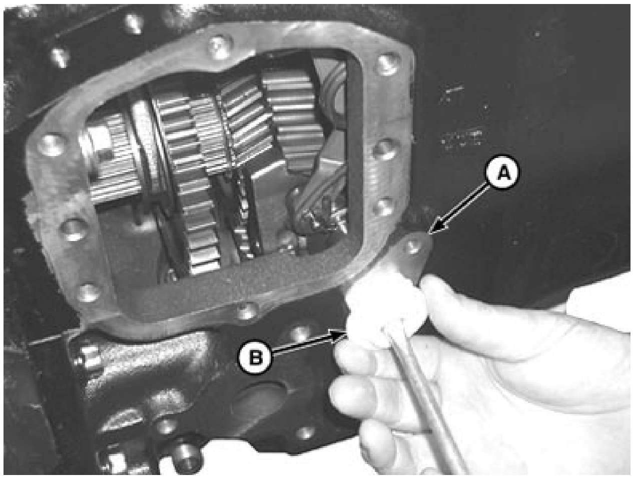
14. While applying inward force, slide outer collar (B) of shim gauge forward until seated against machined surface (A) of transmission housing.

15. Remove fingers from shim gauge. Slowly and evenly remove the inward force applied to center of gauge by the tool with flat or blunt end.

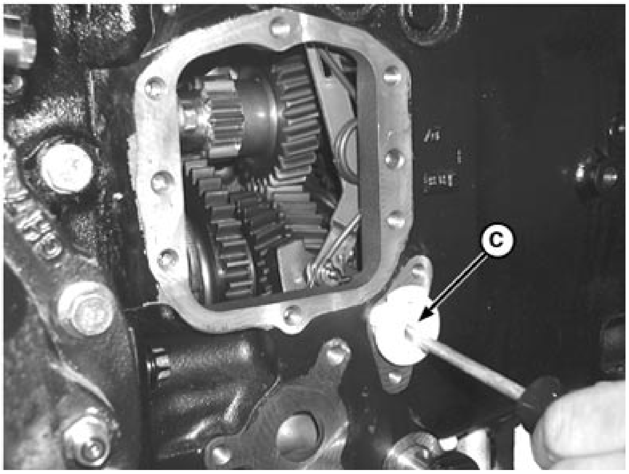
16. Carefully remove shim gauge from cam shaft. Make sure not to change the shim gauge setting during removal.

17. Install shims (D) one at a time, as necessary, between tab (E) and collar flange (F) in shim gauge. Do not force shims in gauge. Retain shim or shims for installation.

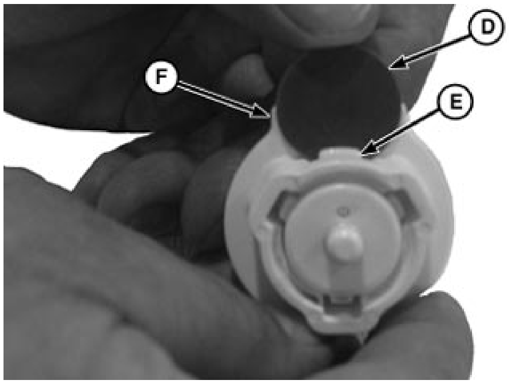
A—Machined Surface
B—Outer Collar
C—Park Cam Shim Gauge
D—Shims
E—Tab
F—Collar Flange



LV10661 –UN–22SEP04



LV10662 –UN–22SEP04



LV10663 –UN–22SEP04

Continued on next page

18. Install shims (B) from shim gauge setting in park cam cover (A).

19. Install one thrust washer (C) on top of shims.

20. Apply multi-purpose grease to both sides of bearing (D).

21. Install bearing (D) on top of thrust washer.

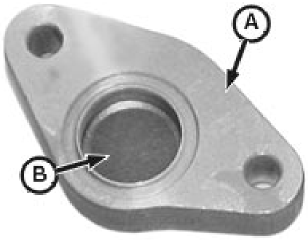
22. Install remaining thrust washer (C) on top of bearing.

23. Apply multi-purpose grease to O-ring groove.

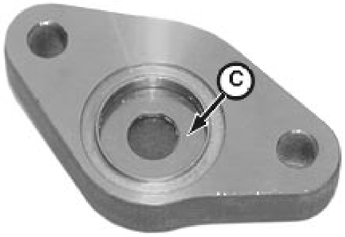
24. Install O-ring (E) in park cam cover (A).

25. Place an identification mark (F) on side edge of cover closest to O-ring, as shown in photo, to aid during installation.

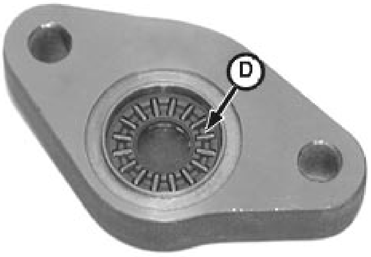
A—Park Cam Cover
B—Shim
C—Thrust Washer
D—Bearing
E—O-Ring
F—Identification Mark



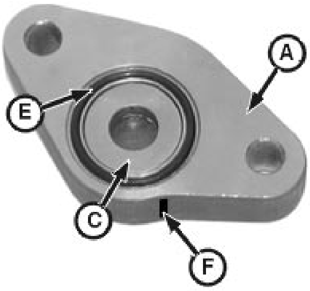
LV7356 –UN–12JUL01



LV7357 –UN–12JUL01



LV7358 –UN–12JUL01



LV7359 –UN–28SEP01

Continued on next page

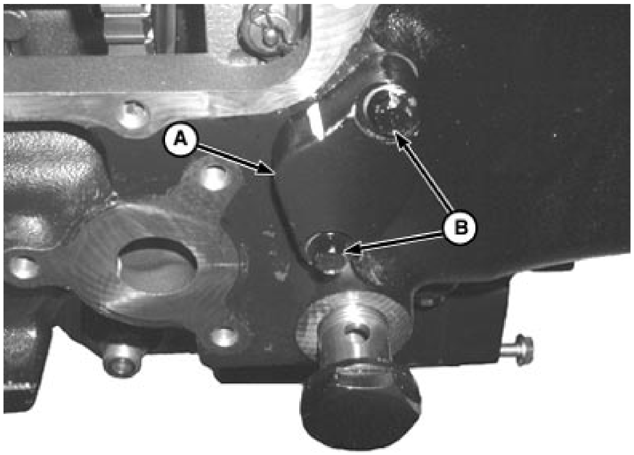
26. Position gearshift lever in neutral.

27. Install park cam cover (A) with identification mark made earlier facing rear of tractor. Use the protruding cam shaft to aid in alignment of cover. Make sure O-ring and thrust washer stay in position during installation.

28. Install two cap screws (B). Tighten cap screws to specification.

Specification

Park Cam Cover Cap Screw— Torque	27 N•m (20 lb-ft)



LV10664 –UN–22SEP04

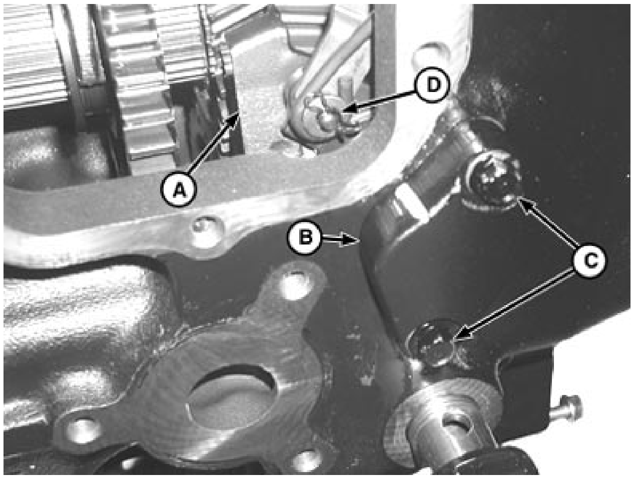
A—Park Cam Cover
B—Cap Screw (2 used)

JG31785,00000CD –19–08OCT04–8/11

29. Move gearshift lever from neutral to park position six or seven times. Leave gearshift lever in park position and verify the following items.
    - Make sure park pawl (A) has movement by pushing inward on park pawl (A). If park pawl has no movement, recheck shimming process with shim gauge.
    - If park pawl still has no movement after rechecking shimming process, remove park cam cover (B) and remove one shim from cover.
    - Install park cam cover (B) and tighten cap screws (C) to specification. Recheck park pawl for movement by pushing inward on park pawl (A).

Specification

Park Cam Cover Cap Screw— Torque	27 N•m (20 lb-ft)



LV10665 –UN–22SEP04

A—Park Pawl
B—Park Cam Cover
C—Cap Screw (2 used)
D—Spring Pin

IMPORTANT: Make sure spring pin (D) is installed properly before installing side cover.

- Position gearshift lever in neutral and check that the spring pin (D) remains hooked, as shown in photo.

Continued on next page

JG31785,00000CD –19–08OCT04–9/11

NOTE: Transmission cover removed for illustration purposes only.

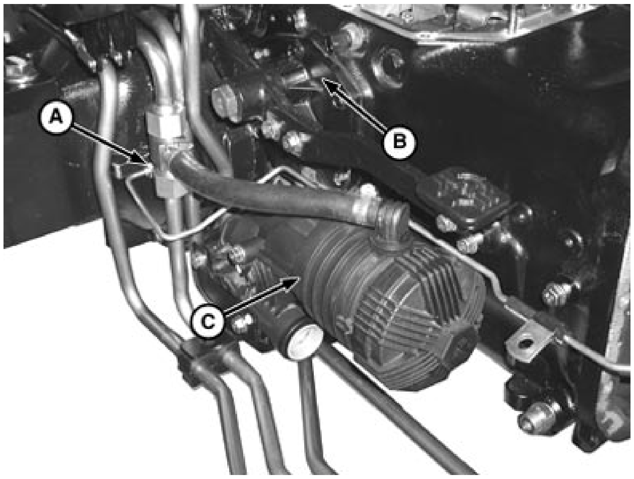
30. Install lower cover or MFWD drop gearbox, if equipped. (See Remove and Install MFWD Drop Gearbox in Section 50, Group 35.)

31. Install side cover (B) or creeper assembly, if equipped. (See Remove and Install Creeper Assembly in Section 50, Group 40.)

32. Install hydraulic oil filter manifold (C). (See Remove and Install Hydraulic Oil Filter/Manifold in Section 70, Group 05.)

33. Install right-side brake line (A).

34. Install left-side brake line.



A—Right-Side Brake Line
B—Side Cover
C—Hydraulic Oil Filter Manifold

Continued on next page JG31785,00000CD –19–08OCT04–10/11

35. Straddle mount tractors: Install PTO lever and linkage. (See Remove, Inspect and Install Rear PTO Lever and Linkage—Straddle Mount in Section 50, Group 20.)

36. Straddle mount tractors: Install 540/540E lever and linkage, if equipped. (See Inspect and Repair PTO 540/540E Shift Lever and Linkage—Straddle Mount in Section 50, Group 20.)

37. Straddle mount tractors: Install Mid-Mount joystick and cable assembly, if equipped. (See Inspect and Repair Joystick and Linkage in Section 70, Group 20.)

38. Straddle mount tractors: Install right- and left-side control console. (See Remove and Install Right-Side Control Console—Straddle Mount and Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.)

39. Install clutch housing to transmission. (See Install Clutch Housing to Transmission—Straddle Mount in Section 50, Group 15.)

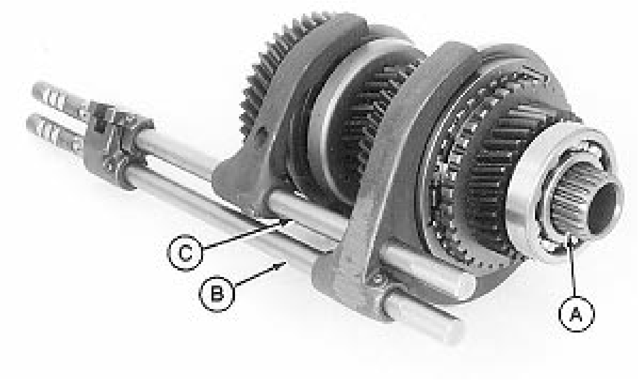
LV10961 –UN–07OCT04

JG31785,00000CD –19–08OCT04–11/11

Disassemble, Inspect and Assemble Gearshift Shaft Assemblies

1. Remove shift shaft assemblies (B and C) from transmission top shaft (A).

A—Transmission Top Shaft
B—Reverse and 2nd Gearshift Shaft Assembly
C—1st and 3rd Gearshift Shaft Assembly

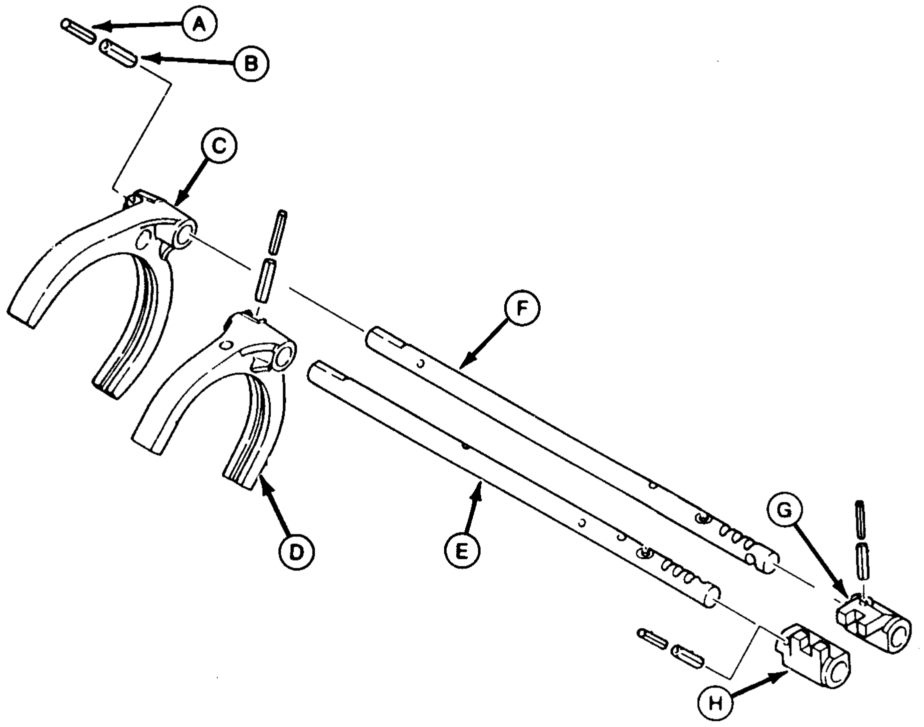


LV626 –UN–17JUN94

SYNCSHUTTLE™

Continued on next page

OUO1082,00002F9 –19–20OCT04–1/2



LV11364 –UN–22OCT04

A—Small Spring Pin (4 used)
B—Large Spring Pin (4 used)
C—Reverse and 2nd Gearshift Fork (CollarShift)
D—1st and 3rd Gearshift Fork (CollarShift)
E—1st and 3rd Gearshift Shaft
F—Reverse and 2nd Gearshift Shaft
G—Reverse and 2nd Gearshift Yoke
H—1st and 3rd Gearshift Yoke

2. Mark position and location of yokes (G and H) and forks (C and D) on shafts to aid in assembly.

3. Drive out spring pins (A and B).

4. Disassemble parts.

5. Inspect parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

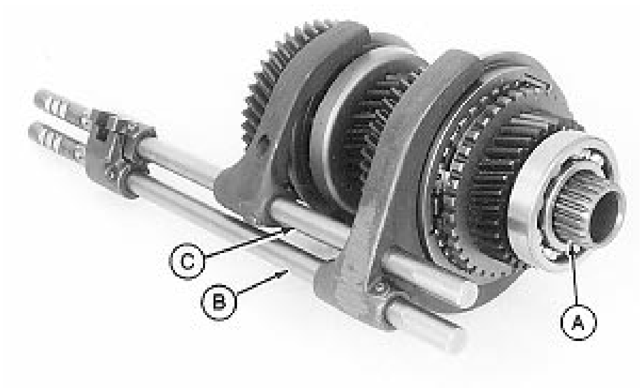
IMPORTANT: Install pins (A) inside pins (B) with splits facing 180° (opposite) from each other.

6. Assemble all parts.

7. Install shift shaft assemblies to transmission top shaft.

OUO1082,00002F9 –19–20OCT04–2/2

Disassemble, Inspect, and Assemble Transmission Top Shaft—SYNCSHUTTLE™ Transmission



LV626 –UN–17JUN94

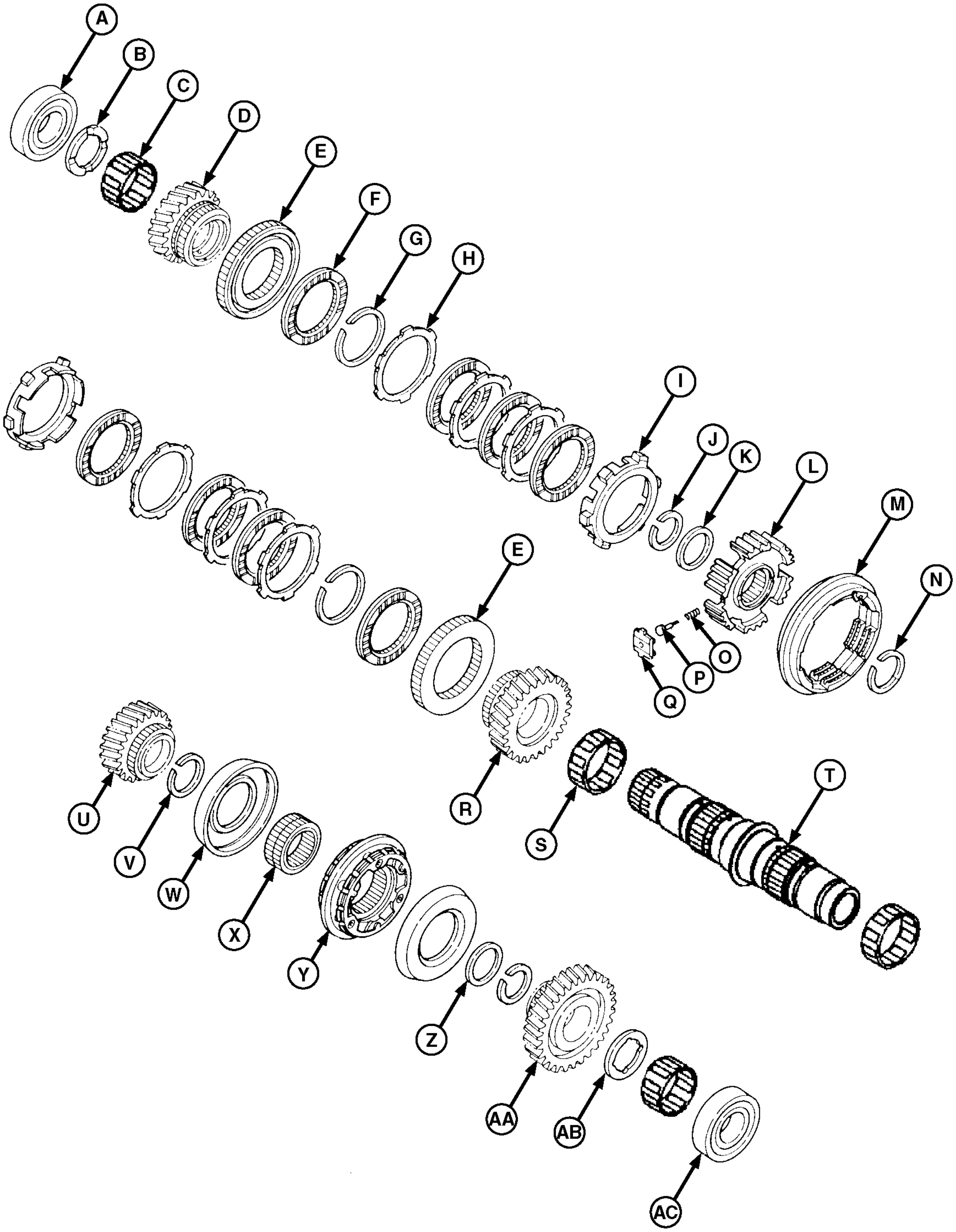
1. Remove reverse and 2nd gearshift shaft assembly (B) and 1st and 3rd gearshift shaft assembly (C) from transmission top shaft (A).

A—Transmission Top Shaft
B—Reverse and 2nd Gearshift Shaft Assembly
C—1st and 3rd Gearshift Shaft Assembly

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

OUO1082,00002FA –19–20OCT04–1/4


A
B
C
D
E
F
G
H
I
J
K
L
M
N
E
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB
AC

LV11368 –UN–26OCT04

Continued on next page

A—Bearing
B—Grooved Washer
C—Needle bearing (2 used)
D—Reverse Drive Gear
E—Splined Coupler (2 used)
F—Disk (8 used)
G—Snap Ring (2 used)
H—Separator Plate (6 used)
I—Drum (2 used)
J—Snap Ring
K—Washer
L—Hub
M—Shift Collar
N—Snap Ring (2 used)
O—Spring (3 used)
P—Detent (3 used)
Q—Insert (3 used)
R—2nd Speed Drive Gear
S—Needle bearing (2 used)
T—Transmission Top Shaft
U—1st Speed Drive Gear
V—Snap Ring
W—Outer Stop Ring (2 used)
X—Splined Coupler
Y—Stop Ring and Pin Assembly
Z—Washer
AA—3rd Speed Drive Gear
AB—Grooved Washer
AC—Bearing

NOTE: Bearings (A and AC) are press fit on shaft (T). Use a knife-edged puller and a press to remove bearings.

To aid in assembly, keep parts together and in proper sequence as the gear cluster is disassembled.

2. Remove parts (A—AC).

OUO1082,00002FA –19–20OCT04–3/4

3. Inspect all parts for wear or damage. Replace as necessary.

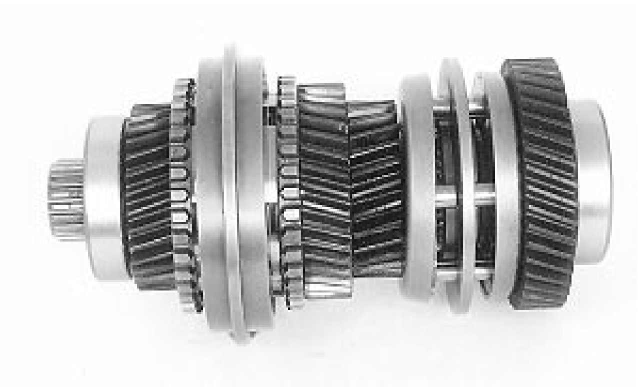
IMPORTANT: Washers (B and AB) must be installed with grooves toward adjacent gears.

Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Install all parts using the following instructions:

   - Apply lithium grease with molybdenum disulphide to ID of gears (D, R, U, and AA).
   - Install the two splined couplers (E) with the smooth side toward gears (D and R).
   - Install splined coupler (X) with grooved side toward gear (U).
   - Install washer (B) with grooved side toward gear (D).
   - Install washer (AB) with grooved side toward gear (AA).
   - Install bearings (A and AC) using a press.

5. Install shift shaft assemblies to the transmission top shaft.



LV627 –UN–17JUN94

OUO1082,00002FA –19–20OCT04–4/4

Disassemble, Inspect, and Assemble Range Reduction Shaft

NOTE: Bearings (A and G) are press fit on shaft.

1. Remove bearings (A and G) using a knife-edged puller and a press.

2. Remove all parts.

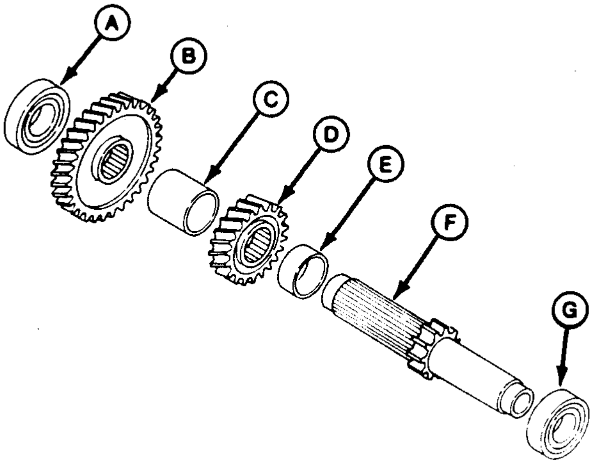
3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

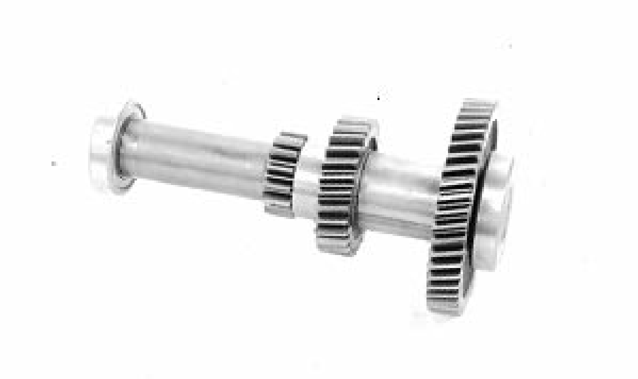
4. Install all parts.

   Install bearings (A and G) using a bearing, bushing, and seal driver set and a press.

A—Bearing
B—Range Reduction Drive Gear
C—Collar
D—B Range Drive Gear
E—Collar
F—Range Reduction Shaft
G—Bearing



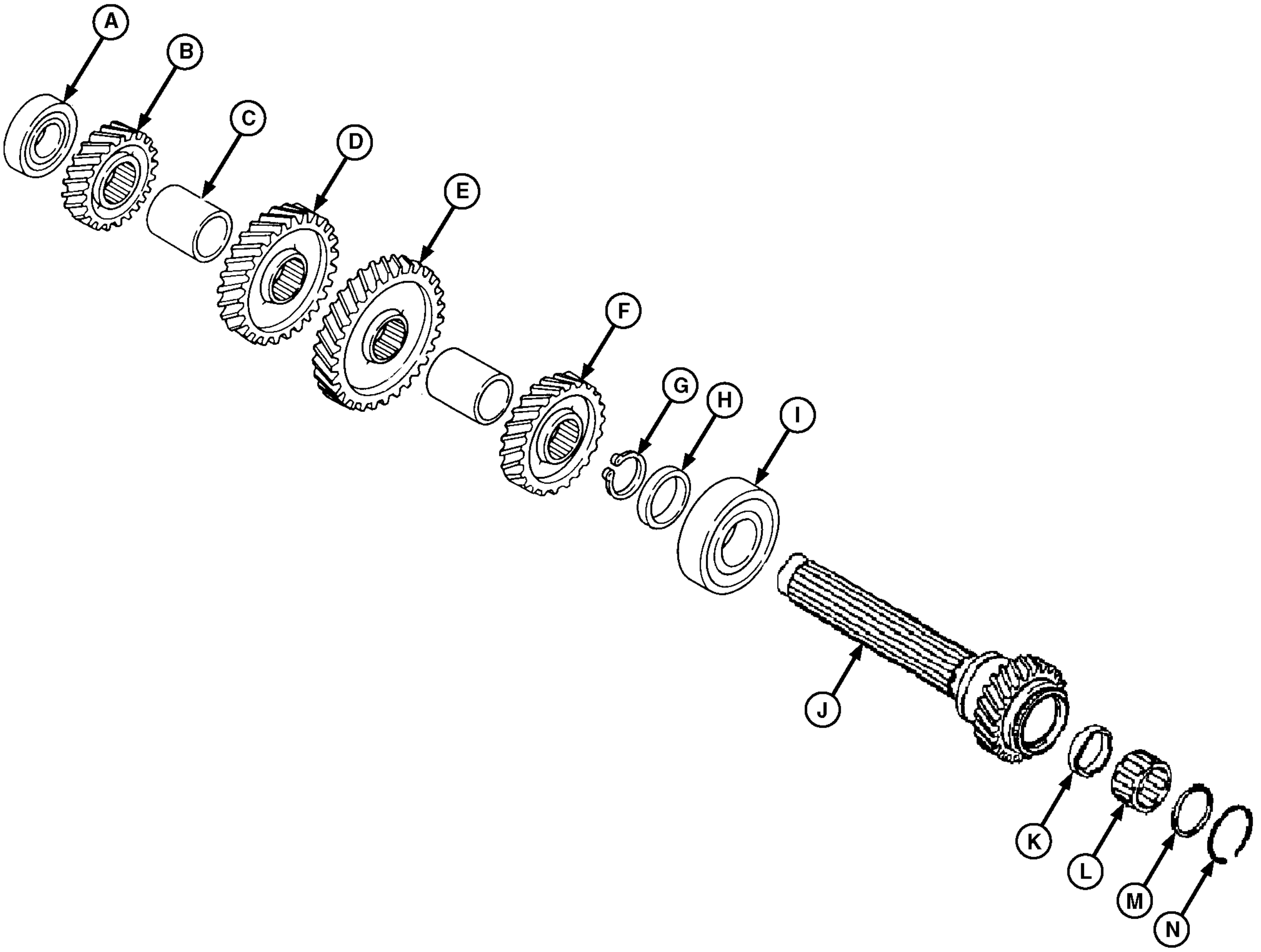
LV478A –UN–03MAR92



LV477 –UN–03MAR92

OUO1082,00002FB –19–20OCT04–1/1

Disassemble, Inspect and Assemble Driven Shaft



A—Bearing
B—Reverse Driven Gear
C—Collar (2 used)
D—2nd Speed Driven Gear
E—1st Speed Driven Gear
F—3rd Speed Driven Gear
G—Snap Ring
H—Spacer
I—Bearing
J—Driven Shaft
K—Collar
L—Needle Bearing
M—Washer
N—Snap Ring

NOTE: Bearings (A and I) are press fit on shaft (J).

1. Remove bearing (A) using a knife-edged puller and a press.
2. Remove parts (B—H).
3. Remove parts (K—N).
4. Remove bearing (I) using a knife-edged puller and a press.
5. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

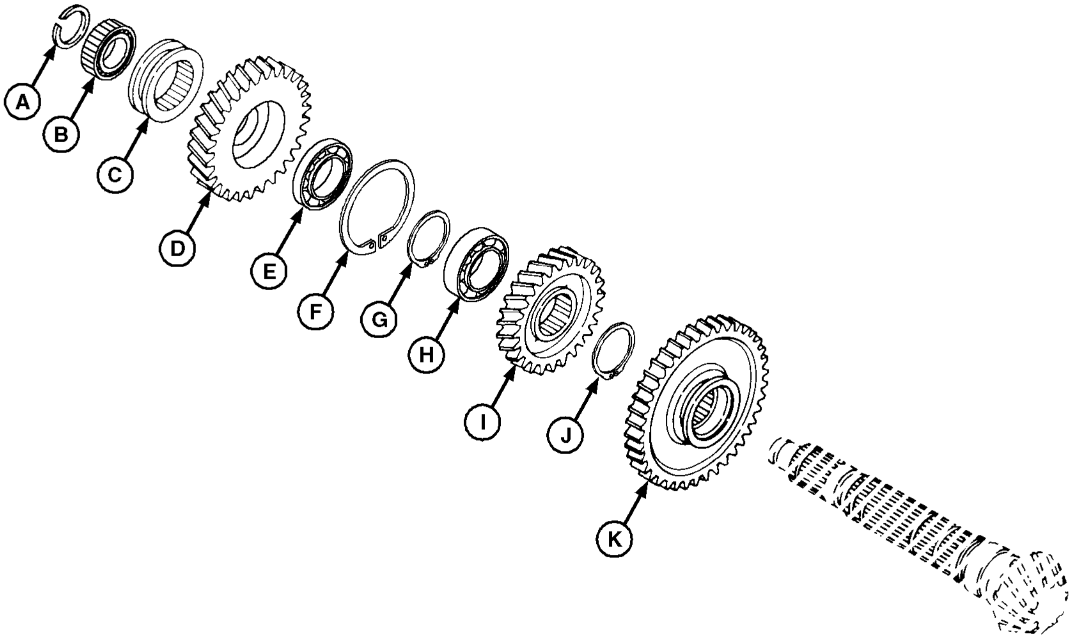
6. Install bearing (I) using a piece of pipe and a press.
7. Install all parts.

Continued on next page

Install bearing (A) using a bearing, bushing, and seal driver set and a press.

OUO1082,00002FC –19–20OCT04–2/2

Remove, Inspect, and Install MFWD and Range Gears



LV11074 –UN–25OCT04

NOTE: If it is necessary to remove the entire shaft, see Remove and Inspect Differential Drive Shaft and Install Differential Drive Shaft in Section 50, Group 25.

1. Remove transmission. (See Remove Transmission in Section 50, Group 15.)

2. Remove parts (A—K).

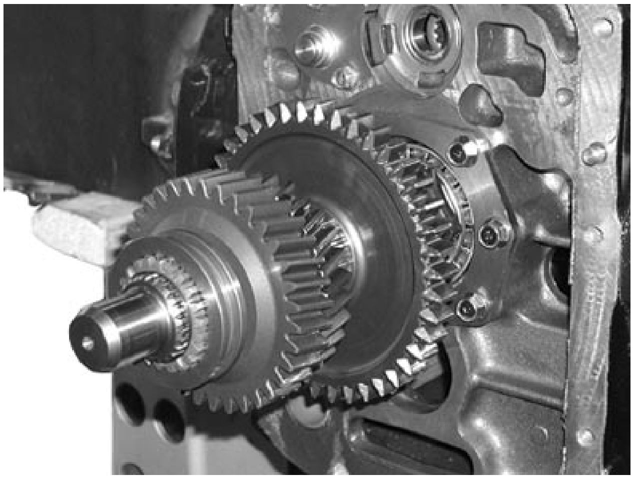
3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Apply lithium grease with molybdenum disulphide to ID of shifter collar (C), and gears (D and K).

5. Install all parts (A—K).

6. Install transmission.



LV10671 –UN–20SEP04

A—Snap Ring
B—Spline Collar
C—Shifter Collar
D—B Range Driven Gear
E—Bearing
F—Snap ring
G—Snap Ring
H—Bearing
I—MFWD Gear
J—Snap Ring
K—A Range and Creeper Shift Sliding Gear

OUO1082,00002FD –19–20OCT04–1/1

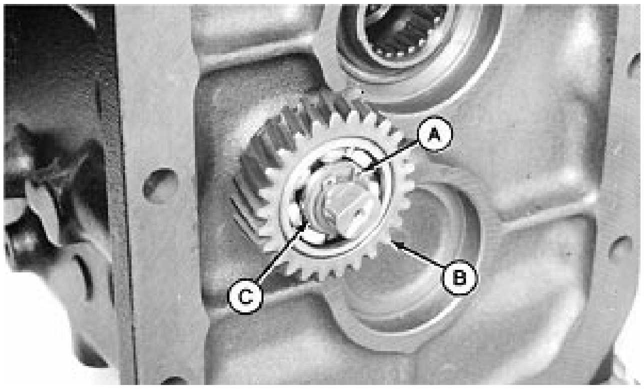
Remove, Inspect, and Install Reverse Idler Shaft

NOTE: Reverse idler shaft is mounted to rear of clutch housing.

1. Separate clutch housing from transmission. (See Separate Clutch Housing from Transmission—Straddle Mount or Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)

2. Remove snap ring (A) and washer (C).

3. Remove reverse idler gear assembly (B).



LV486 –UN–03MAR92

A—Snap Ring
B—Reverse Idler Gear Assembly
C—Washer

Continued on next page

OUO1082,00002FE –19–20OCT04–1/2

4. Remove reverse idler shaft (A).

NOTE: Bearings (B) and (E) are press fit in gear (C).

5. Remove bearings (B) and (E) using a bearing, bushing, and seal driver set and a press.

6. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

7. Assembly parts (B—E). Install bearings using a bearing, bushing, and seal driver set and a press.

8. Apply Thread Lock and Sealer (Medium Strength) to threads of reverse idler shaft (A).

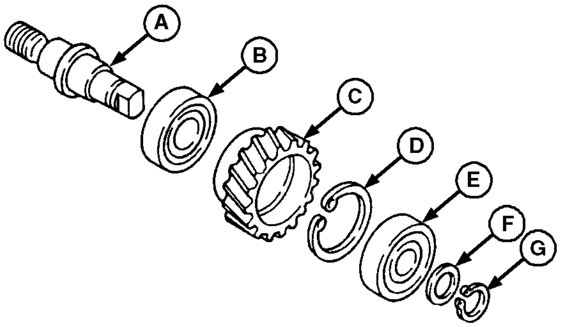
9. Install reverse idler shaft and tighten to specification.

Specification

Reverse Idler Shaft—Torque.. 132 N•m (97 lb-ft)

10. Install idler gear assembly, washer (F), and snap ring (G).

11. Install clutch housing to transmission. (See Install Clutch Housing to Transmission—Straddle Mount or Install Clutch Housing to Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)



LV11366 –UN–25OCT04

A—Reverse Idler Shaft
B—Bearing
C—Reverse Idler Gear
D—Snap Ring
E—Bearing
F—Washer
G—Snap Ring

OUO1082,00002FE –19–20OCT04–2/2

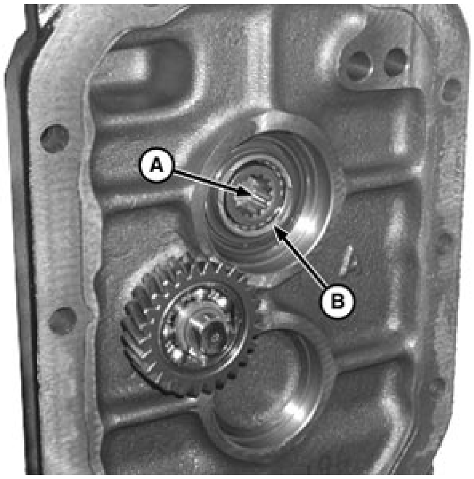
Replace Clutch Housing Seal

1. Separate clutch housing from transmission. (See Separate Clutch Housing from Transmission—Straddle Mount or Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)

2. Remove PTO clutch shaft coupler (A).

NOTE: Traction clutch shaft will only pull out part way. When removing traction clutch shaft, the PTO clutch shaft may slide out with the traction clutch shaft.

3. Remove traction clutch shaft (B) using an inside puller and slide hammer.



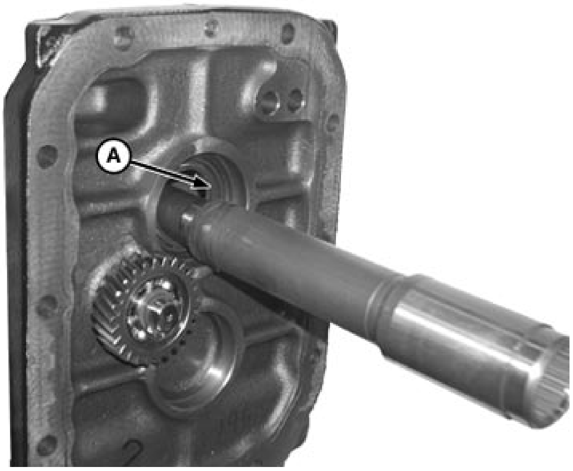
LV10924 –UN–07OCT04

A—PTO Clutch Shaft Coupler
B—Traction Clutch Shaft

JG31785,00000CB –19–29SEP04–1/3

4. Pry out clutch housing seal (A).

A—Clutch Housing Seal



LV10925 –UN–07OCT04

Continued on next page

JG31785,00000CB –19–29SEP04–2/3

IMPORTANT: When installing clutch shafts, make sure splines on opposite end of shafts are in alignment with clutch disk splines before striking ends of shaft with a hammer. Damage to clutch disks and shaft splines can occur.

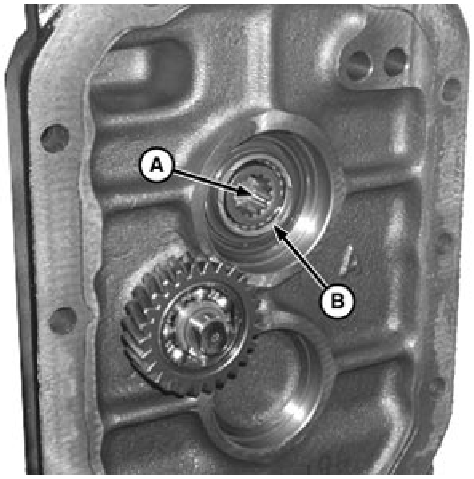
5. Install clutch shaft (B). Align opposite ends of each shaft with clutch disks. Rotate shaft in either direction if necessary. Tap on the end of each shaft using a brass drift and hammer to fully seat each shaft in its respective bore.

6. Apply multipurpose grease to the lips of new seal.

7. Install seal with lips facing away from clutch housing using a brass drift and hammer. Install seal until it stops.

8. Install PTO clutch shaft coupler (A).

9. Install clutch housing to transmission. (See Install Clutch Housing to Transmission—Straddle Mount or Install Clutch Housing to Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)



LV10924 –UN–07OCT04

A—PTO Clutch Shaft Coupler
B—Clutch Shaft

JG31785,00000CB –19–29SEP04–3/3

50
15
55

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

OUO1082,00002E6 –19–07OCT04–1/2

Park Cam Shim Gauge RE188114

Park pawl adjustment.

OUO1082,00002E6 –19–07OCT04–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,00002E7 –19–07OCT04–1/2

Bushing, Bearing, and Seal Driver Set

Used to install bearing on transmission bottom shaft.

OUO1082,00002E7 –19–07OCT04–2/2

Other Material

Number	Name	Use
PM38656 (U.S.) NA (Canadian) 515 (LOCTITE®)	Form-in-Place Gasket	Apply to shift lever housing.
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cleans mating surfaces and reduces sealant curing time.
PM38657 (U.S.) PM38628 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Seals the transmission case to differential housing.
PM37477 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to shift fork cap screw threads.
TY6333 (U.S.) CXTY6333 (Canadian)	Lithium Grease with Molybdenum Disulphide	Apply to ID of range gears. Apply to ID of MFWD and range gear shifter collar.

LOCTITE is a trademark of Loctite Corp.

OUO1082,00002E8 –19–07OCT04–1/1

Specifications

Item	Measurement	Specification
Transmission-to-Differential Cap Screw	Torque	140 N•m (105 lb-ft)
Park Pawl Cover Cap Screw	Torque	27 N•m (20 lb-ft)

OUO1082,00002E9 –19–07OCT04–1/1

Separate Clutch Housing from Transmission

SeeSeparate Clutch Housing from Transmission—Straddle Mount or Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractorsin Section 50, Group 15. Any differences between SYNCSHUTTLE™ and POWRREVERSER™ transmissions are noted.

SYNCSHUTTLE is a trademark of Deere & Company
POWRREVERSER is a trademark of Deere & Company

OUO1082,00002D1 –19–23SEP04–1/1

Install Clutch Housing to Transmission

See Install Clutch Housing to Transmission—Straddle Mount or Install Clutch Housing to Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15. Any differences between SYNCSHUTTLE™ and POWRREVERSER™ transmissions are noted.

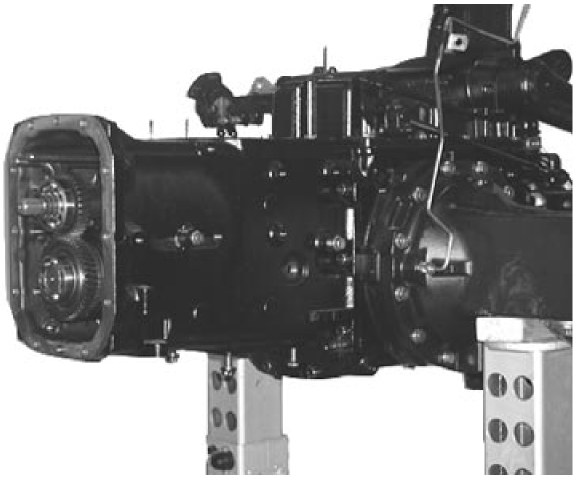
SYNCSHUTTLE is a trademark of Deere & Company
POWRREVERSER is a trademark of Deere & Company

OUO1082,00002D2 –19–23SEP04–1/1

Remove Transmission

NOTE: POWRREVERSER™ transmissions and POWRREVERSER transmissions with Electro-Hydraulic Hi/Lo are similar unless stated.

NOTE: Close all openings using caps and plugs.



LV10668 –UN–22SEP04

1. Separate clutch housing from transmission. (See Separate Clutch Housing from Transmission—Straddle Mount or Separate Clutch Housing from Transmission—Isolated Open Operator Station and Cab Tractors in Section 50, Group 15.)

2. Straddle mount tractors: Remove right- and left-side control console. (See Remove and Install Right-Side Control Console—Straddle Mount and Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.)

3. Straddle mount tractors: Remove left-side fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

4. Straddle mount tractors: Remove 540/540E lever and linkage, if equipped. (See Inspect and Repair PTO 540/540E Shift Lever and Linkage—Straddle Mount in Section 50, Group 20.)

5. Straddle mount tractors: Remove PTO lever and linkage. (See Remove, Inspect and Install Rear PTO Lever and Linkage—Straddle Mount in Section 50, Group 20.)

50
16
4

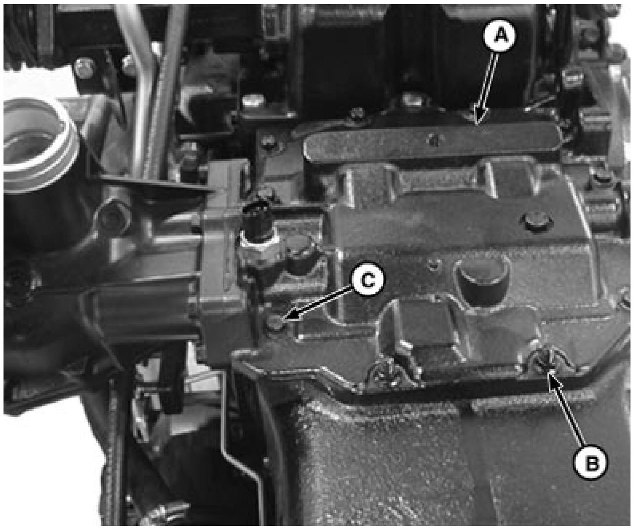
POWRREVERSER is a trademark of Deere & Company

Continued on next page

OUO6083,0007532 –19–16SEP04–1/7

6. Remove cap screws (C) and nuts (B) to remove cover (A). Repair cover if necessary. (See Disassemble and Inspect Transmission in Section 50, Group 16.)

A—Transmission Cover
B—Nut (2 used)
C—Cap Screw (8 used)

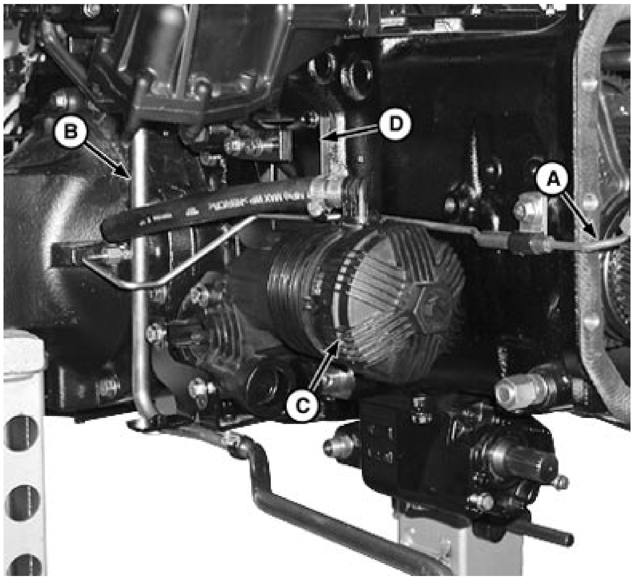


LV10669 –UN–22SEP04

OUO6083,0007532 –19–16SEP04–2/7

7. Remove right- (A) and left-side brake lines from transmission.
8. Remove hydraulic inlet line (B).
9. Remove hydraulic oil filter assembly (C). (See Remove and Install Hydraulic Oil Filter/Manifold in Section 70, Group 05.)
10. Remove right-side cover (D) or creeper assembly, if equipped. (See Remove and Install Creeper Assembly in Section 50, Group 40.)
11. Remove lower cover or MFWD drop gearbox, if equipped. (See Remove and Install MFWD Drop Gearbox in Section 50, Group 35.)

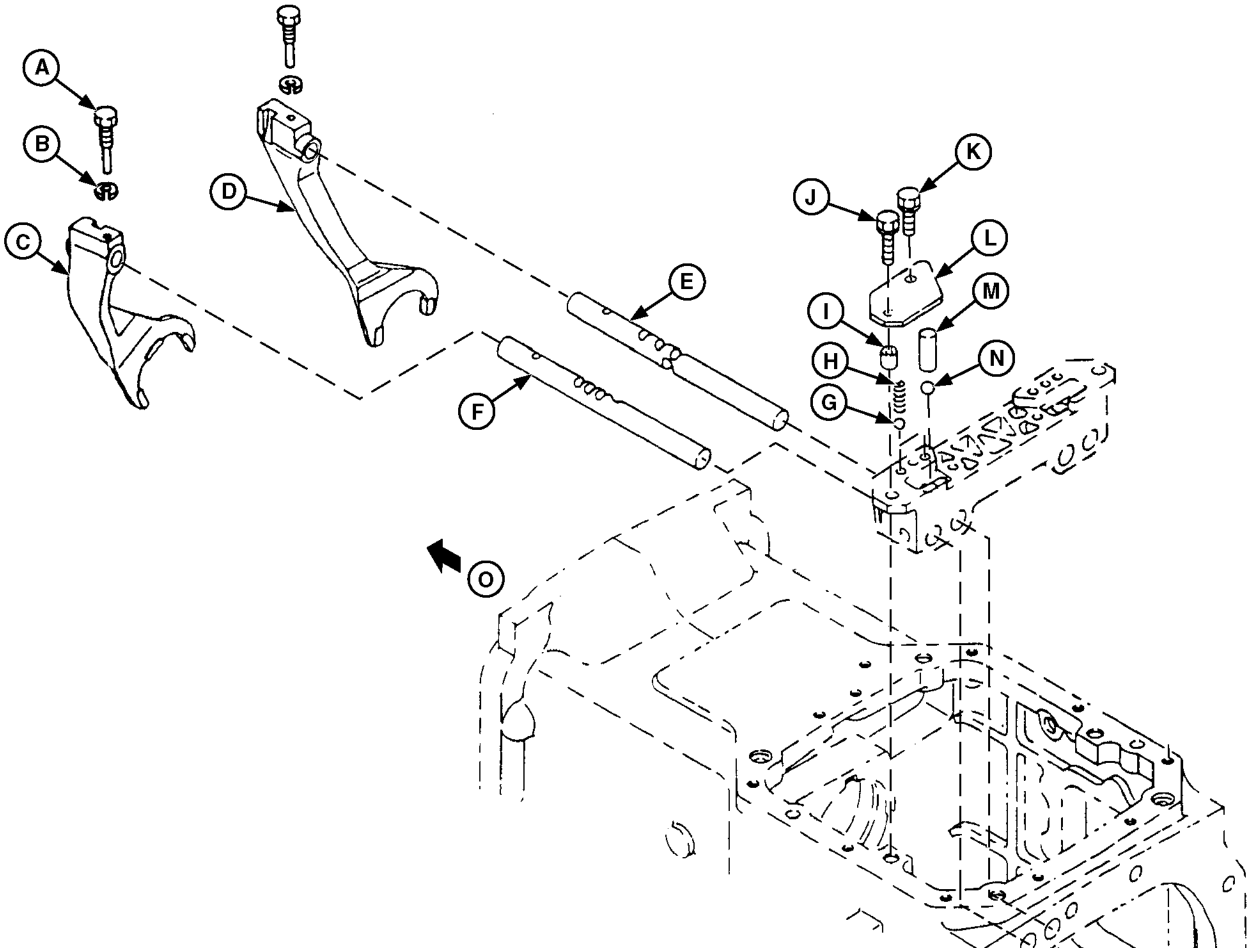
A—Right-Side Brake Line
B—Hydraulic Inlet Line
C—Hydraulic Oil Filter Assembly
D—Right-Side Cover



LV10685 –UN–23SEP04

Continued on next page

OUO6083,0007532 –19–16SEP04–3/7



A—Cap Screw (2 used)
B—Lock Washer (2 used)
C—B and C Range Shift Fork
D—A Range and Creeper Shift Fork
E—A Range and Creeper Shift Shaft
F—B and C Range Shift Shaft
G—Ball (2 used)
H—Spring (2 used)
I—Bushing
J—Cap Screw
K—Cap Screw
L—Plate
M—Pin
N—Ball
O—Front of Tractor

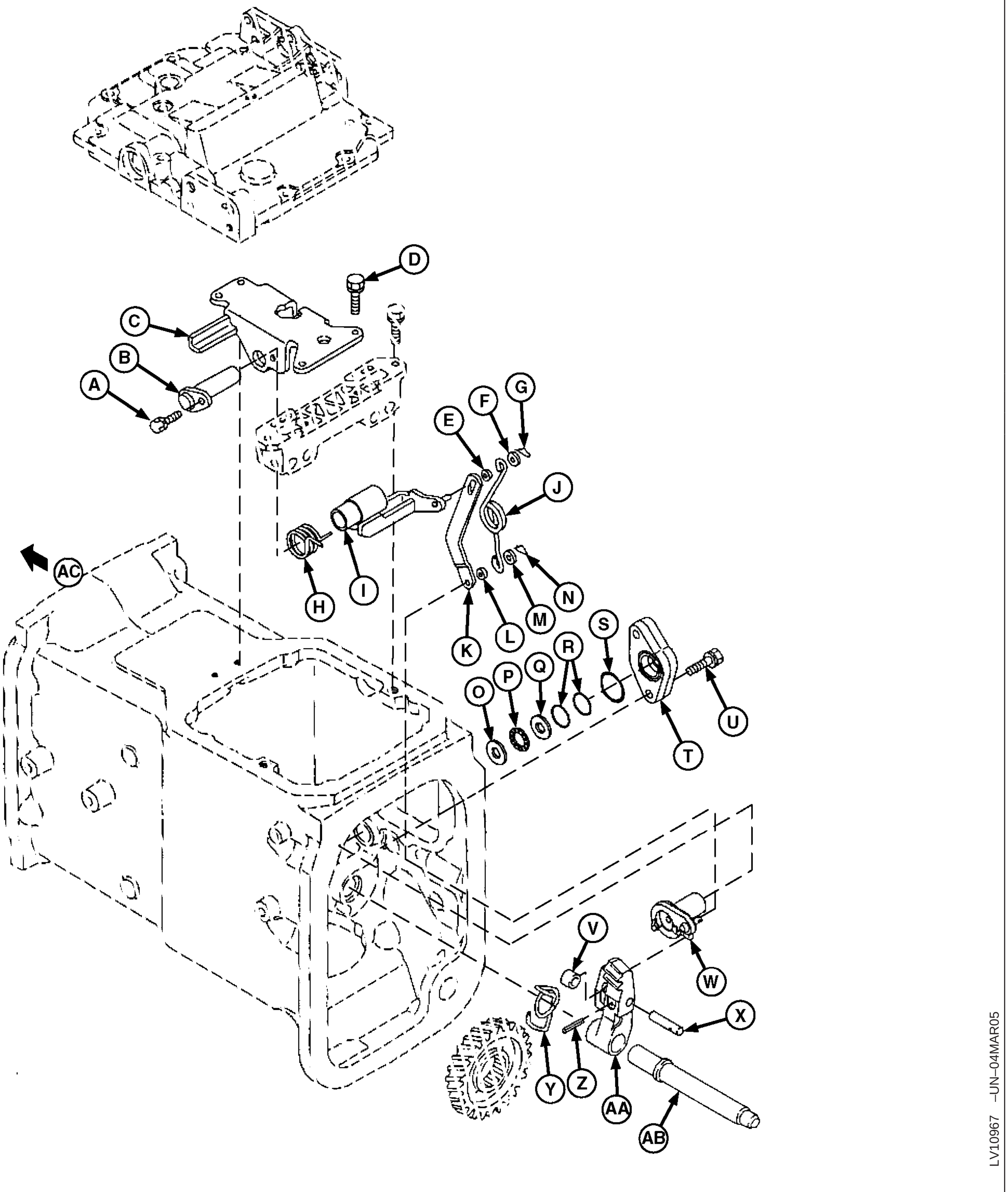
12. Remove parts (G—N).

13. Remove cap screws (A) and lock washers (B). Remove range shift shafts (E and F) by sliding them forward out of the transmission housing.

14. Remove A range and creeper shift fork (D).

15. Remove B and C range shift fork (C).

Continued on next page


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB
AC
LV10967 –UN–04MAR05

Continued on next page

A—Cap Screw
B—Shift Shaft
C—Park Lock Guide
D—Cap Screw (2 used)
E—Collar
F—Washer
G—Snap Pin
H—Spring
I—Shift Arm
J—Park Spring
K—Link
L—Collar
M—Washer
N—Snap Pin
O—Thrust Washer
P—Needle Bearing
Q—Thrust Washer
R—Shim
S—O-Ring
T—Park Pawl Cover
U—Cap Screw (2 used)
V—Roller
W—Cam
X—Pin
Y—Spring
Z—Pin
AA—Park Pawl
AB—Park Shaft
AC—Front of Tractor

16. Remove parts (A—U).

17. Inspect parts for wear or damage. Replace as necessary.

OUO6083,0007532 –19–16SEP04–6/7

IMPORTANT: Before separating the transmission from rear differential housing, rotate park pawl outward until it rests against the park arm inside of transmission housing. If park pawl is not rotated, damage to gears may result when transmission is separated from the rear differential housing.

18. Rotate park pawl fully outward to side of transmission case.

19. Position a jack stand under drawbar assembly.

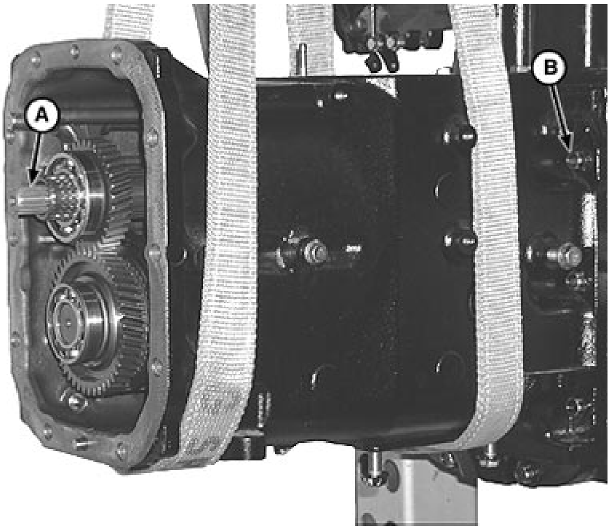
20. Attach hoist and straps to transmission housing.

21. Remove PTO shaft (A).

NOTE: Differential drive shaft and gear cluster assembly will stay with the differential during transmission removal.

22. Remove twelve cap screws (B). Remove transmission.

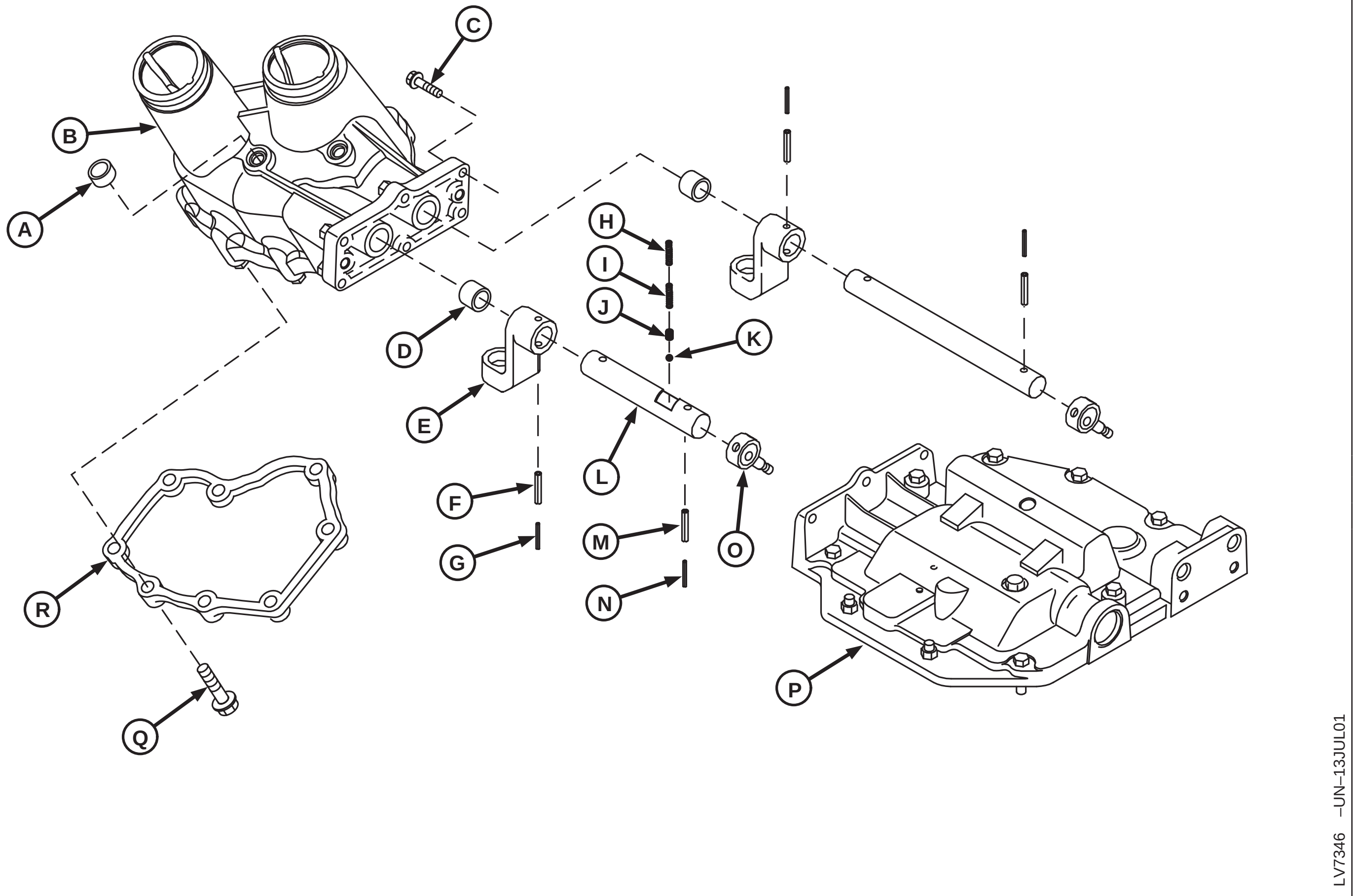
23. Make repairs as necessary. (See Disassemble and Inspect Transmission in Section 50, Group 16.)



A—PTO Shaft
B—Cap Screw (12 used)

OUO6083,0007532 –19–16SEP04–7/7

Disassemble and Inspect Transmission



A—Plug (2 used)	**F—Spring Pin (2 used)**	**K—Ball**	**O—Shift Arm**
B—Shift Lever Housing	**G—Spring Pin (2 used)**	**L—Shift Shaft**	**P—Transmission Cover**
C—Cap Screw (6 used)	**H—Spring**	**M—Spring Pin**	**Q—Cap Screw (8 used)**
D—Bushing (2 used)	**I—Spring**	**N—Spring Pin**	**R—Shift Lever Housing Cover**
E—Shift Lever (2 used)	**J—Spring**		

NOTE: POWRREVERSER™ transmissions and POWRREVERSER transmissions with Electro-Hydraulic Hi/Lo are similar unless stated.

1. Remove plugs (A), cap screws (Q) and shift lever housing cover (R).
2. Remove pins (F and G) through plug holes.
3. Remove shift levers (E), cap screws (C) and shift lever housing (B).
4. Inspect parts for wear or damage. Replace as necessary.

POWRREVERSER is a trademark of Deere & Company

Continued on next page

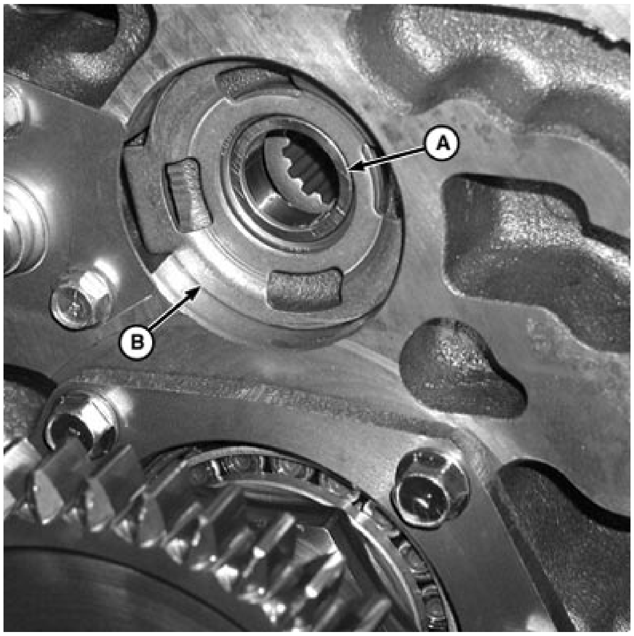
NOTE: *Bushings (D) are a press fit in shift lever housing (B). Remove bushings only if replacement is necessary.*

5. Replace bushings (D) using a bushing, bearing, and seal driver set.

OUO1082,00002E5 –19–05OCT04–2/9

6. Remove oil deflector (B) and bearing (A) from differential housing.
7. Inspect parts for wear or damage. Replace if necessary.

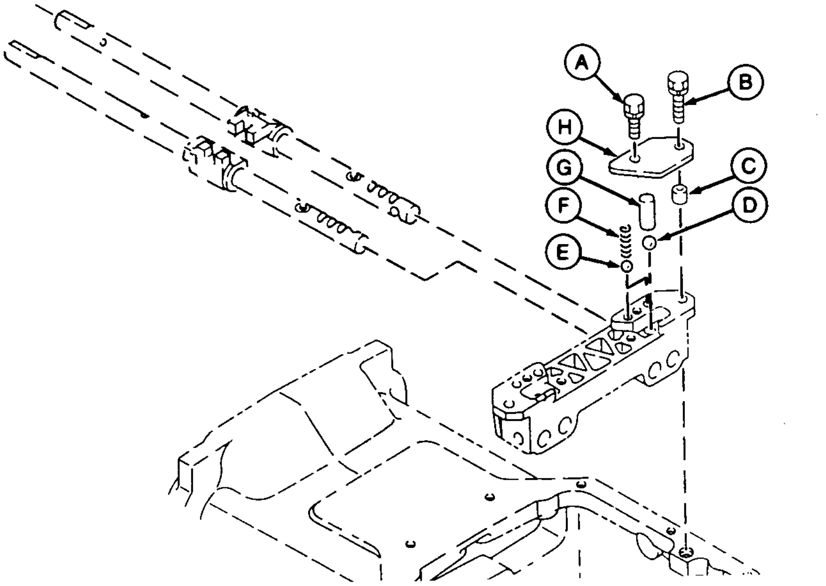
A—Bearing
B—Oil Deflector



LV10670 –UN–22SEP04

Continued on next page

OUO1082,00002E5 –19–05OCT04–3/9



LV1238A –UN–21DEC94

A—Cap Screw	**C—Bushing**	**E—Ball (2 used)**	**G—Pin**
B—Cap Screw	**D—Ball**	**F—Spring (2 used)**	**H—Plate**

8. Remove parts (A—H).

NOTE: Reinstall bushing (C) and cap screw (B) to ease removal of gearshift shaft assembly.

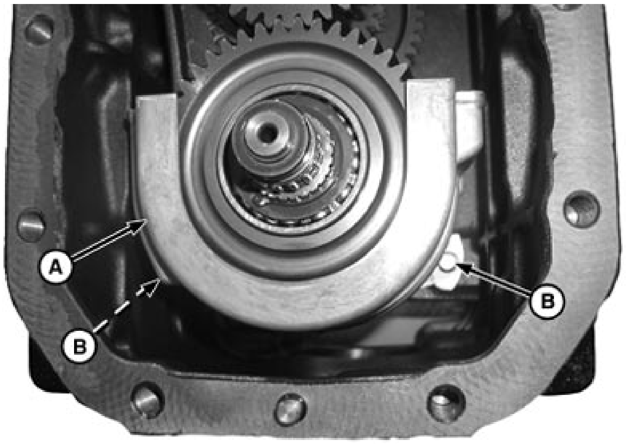
9. Install bushing (C) and cap screw (B).

10. Inspect parts for wear or damage. Replace as necessary.

OUO1082,00002E5 –19–05OCT04–4/9

11. On POWRREVERSER transmissions with EH Hi/Lo: Remove two shoulder cap screws (B) holding oil tray (A). Oil tray will remain in bottom of transmission.

A—Oil Tray
B—Shoulder Cap Screw (2 used)



LV11079 –UN–06OCT04

Continued on next page

OUO1082,00002E5 –19–05OCT04–5/9

NOTE: To remove top shaft and bottom shaft, rear bearing of both shafts must be unseated from case.

12. Move top shaft (B) and bottom shaft (C) assemblies, along with shift shaft assembly (A), forward untill rear bearings unseat from case and set shafts in bottom of case.

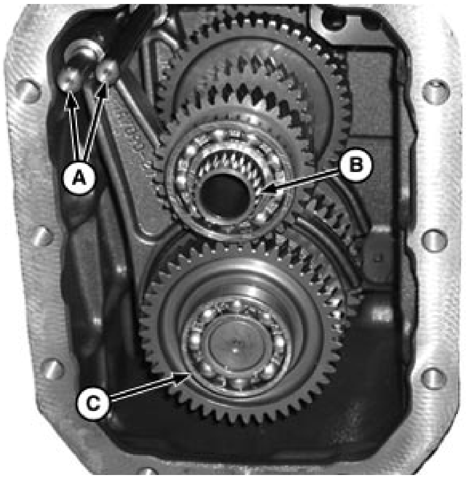
13. Remove top shaft (B).

14. Disassemble and inspect parts as necessary. (See Disassemble, Inspect, and Assemble Top Shaft in Section 50, Group 16.)

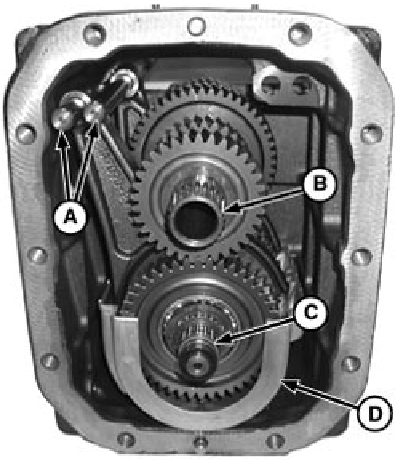
15. Remove transmission bottom shaft (C) with shift shaft assembly (A) and oil tray (D) on EH Hi/Lo transmissions.

16. Disassemble and inspect parts as necessary. (See Disassemble, Inspect, and Assemble Transmission Bottom Shaft and Disassemble, Inspect, and Assemble Gearshift Shaft Assemblies in Section 50, Group 16.)

A—Shift Shaft Assembly
B—Top Shaft
C—Bottom Shaft
D—Oil Tray



POWRREVERSER Transmission Without EH Hi/Lo



POWRREVERSER Transmission With EH Hi/Lo

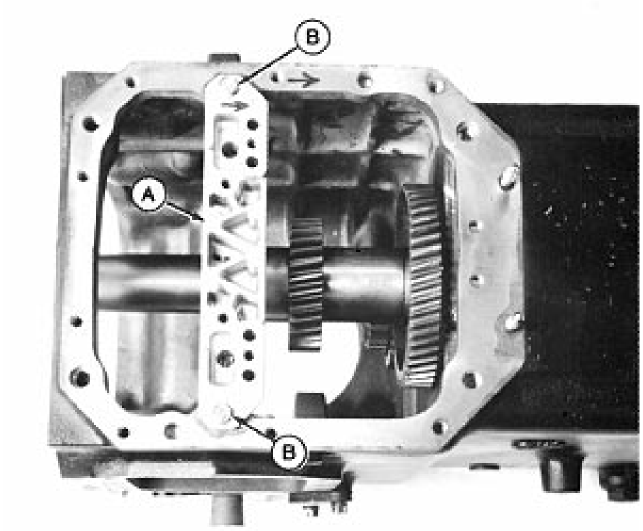
OUO1082,00002E5 –19–05OCT04–6/9

17. Mark support (A) and transmission case to aid in installation.

18. Remove cap screws and bushings (B) and support (A).

19. Inspect parts for wear or damage. Replace as necessary.

A—Support
B—Cap Screw and Bushing (2 used)



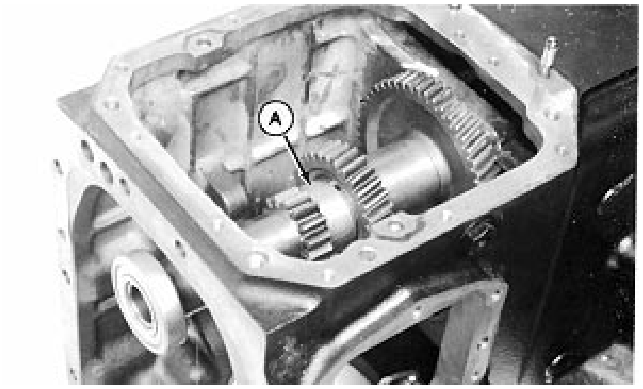
Continued on next page

OUO1082,00002E5 –19–05OCT04–7/9

20. Remove range reduction shaft (A).

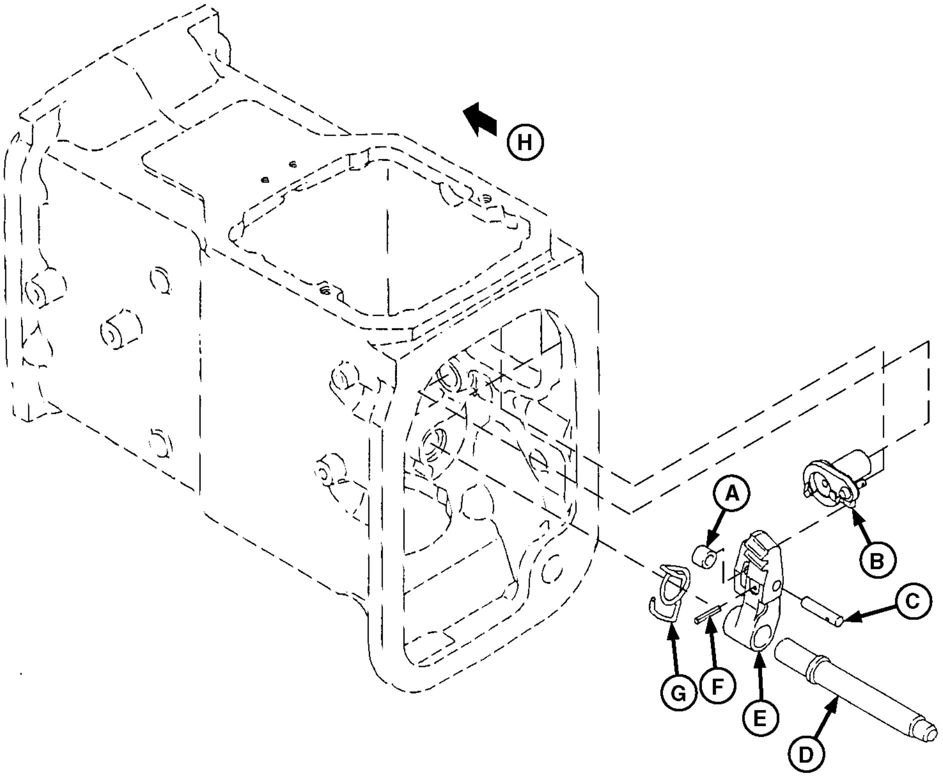
21. Disassemble and inspect parts as necessary. (See Disassemble, Inspect, and Assemble Range Reduction Shaft in Section 50, Group 16.)

A—Range Reduction Shaft



LV471 –UN–03MAR92

OUO1082,00002E5 –19–05OCT04–8/9



LV10609 –UN–17NOV04

A—Roller	**C—Pin**	**E—Park Pawl**	**G—Spring**
B—Cam	**D—Park Shaft**	**F—Pin**	**H—Front of Tractor**

22. Remove and inspect parts (A—G). Replace if necessary.

23. Inspect transmission case for cracks or damage. Replace if necessary.

OUO1082,00002E5 –19–05OCT04–9/9

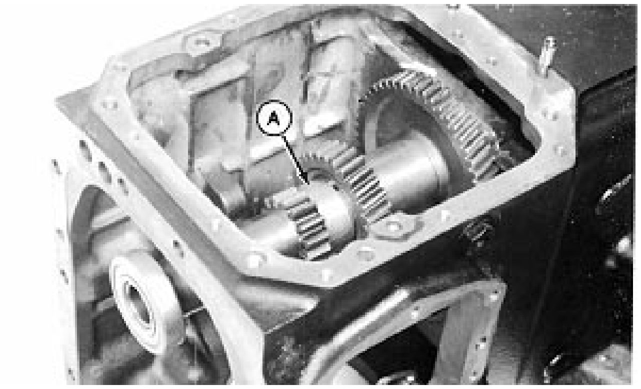
Assemble Transmission

NOTE: POWRREVERSER™ transmissions and POWRREVERSER transmissions with Electro-Hydraulic Hi/Lo are similar unless stated.

NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

IMPORTANT: Use new seals and O-rings during assembly. Damaged or used seals or O-rings will leak.

1. Install range reduction shaft (A).



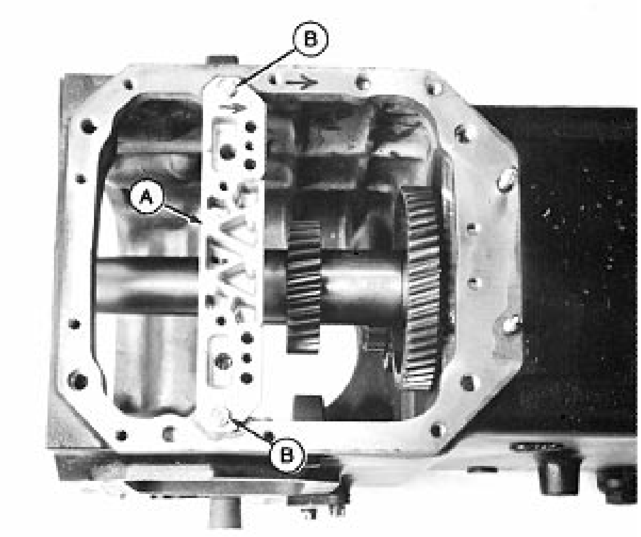
A—Range Reduction Shaft

POWRREVERSER is a trademark of Deere & Company

OUO1082,00002D3 –19–23SEP04–1/10

2. Align support (A) with transmission case with marks made during disassembly.

A—Support
B—Bushing and Cap Screw (2 used)

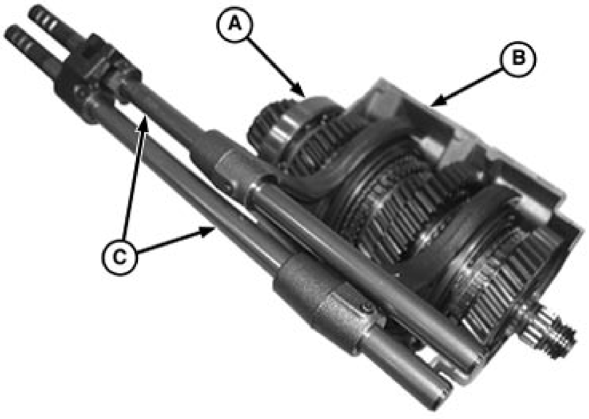


Continued on next page

OUO1082,00002D3 –19–23SEP04–2/10

3. On POWRREVERSER transmissions with EH Hi/Lo: Place bottom shaft assembly (A) along with shift shaft assembly (C) in oil tray (B).

A—Bottom Shaft Assembly
B—Oil Tray
C—Shift Shaft Assembly



LV11078 –UN–07OCT04

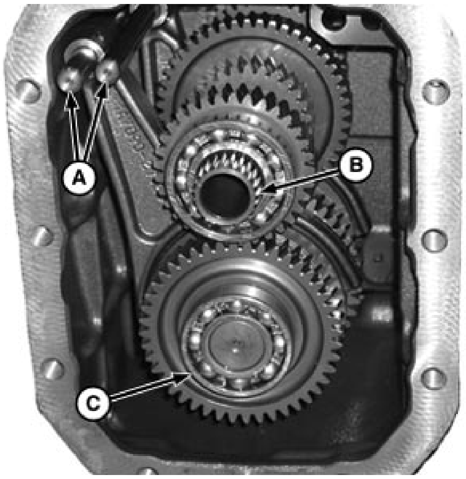
OUO1082,00002D3 –19–23SEP04–3/10

4. Place top and bottom shaft assemblies along with shift shaft assembly in transmission case.

5. Install top shaft (B). Tap on end of shaft with a soft-faced hammer to fully seat shaft in case bore.

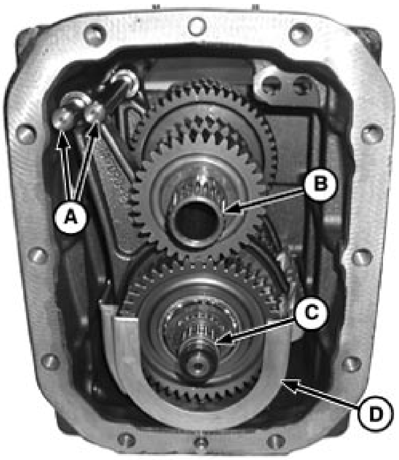
6. Install bottom shaft with shift shaft assembly.

A—Shift Shaft Assembly
B—Top Shaft
C—Bottom Shaft
D—Oil Tray



LV11076 –UN–06OCT04

POWRREVERSER Transmission Without EH Hi/Lo



LV11077 –UN–06OCT04

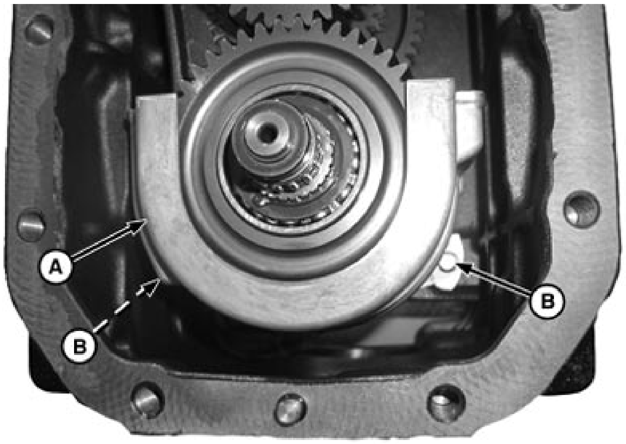
POWRREVERSER Transmission With EH Hi/Lo

Continued on next page

OUO1082,00002D3 –19–23SEP04–4/10

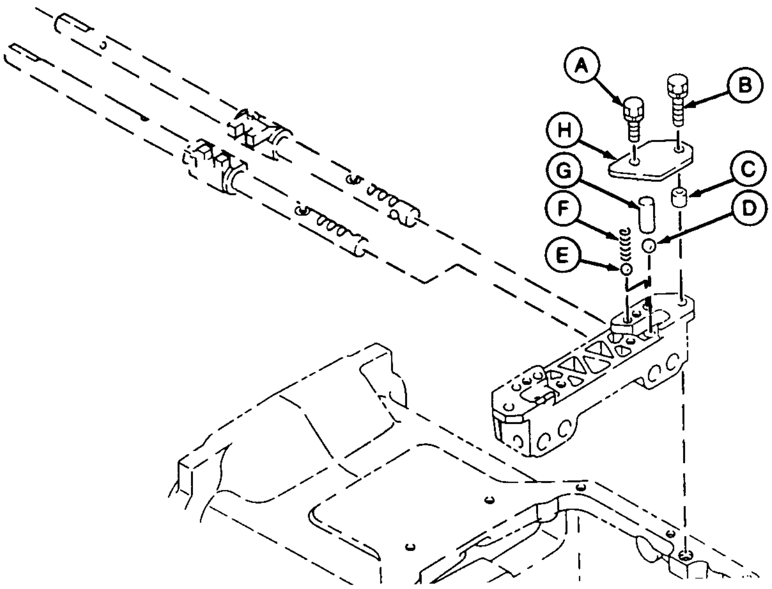
7. On POWRREVERSER transmissions with EH Hi/Lo: Install two shoulder cap screws (B) to retain oil tray (A).

A—Oil Tray
B—Shoulder Cap Screw (2 used)



LV11079 –UN–06OCT04

OUO1082,00002D3 –19–23SEP04–5/10



LV1238A –UN–21DEC94

A—Cap Screw	**C—Bushing**	**E—Ball (2 used)**	**G—Pin**
B—Cap Screw	**D—Ball**	**F—Spring (2 used)**	**H—Plate**

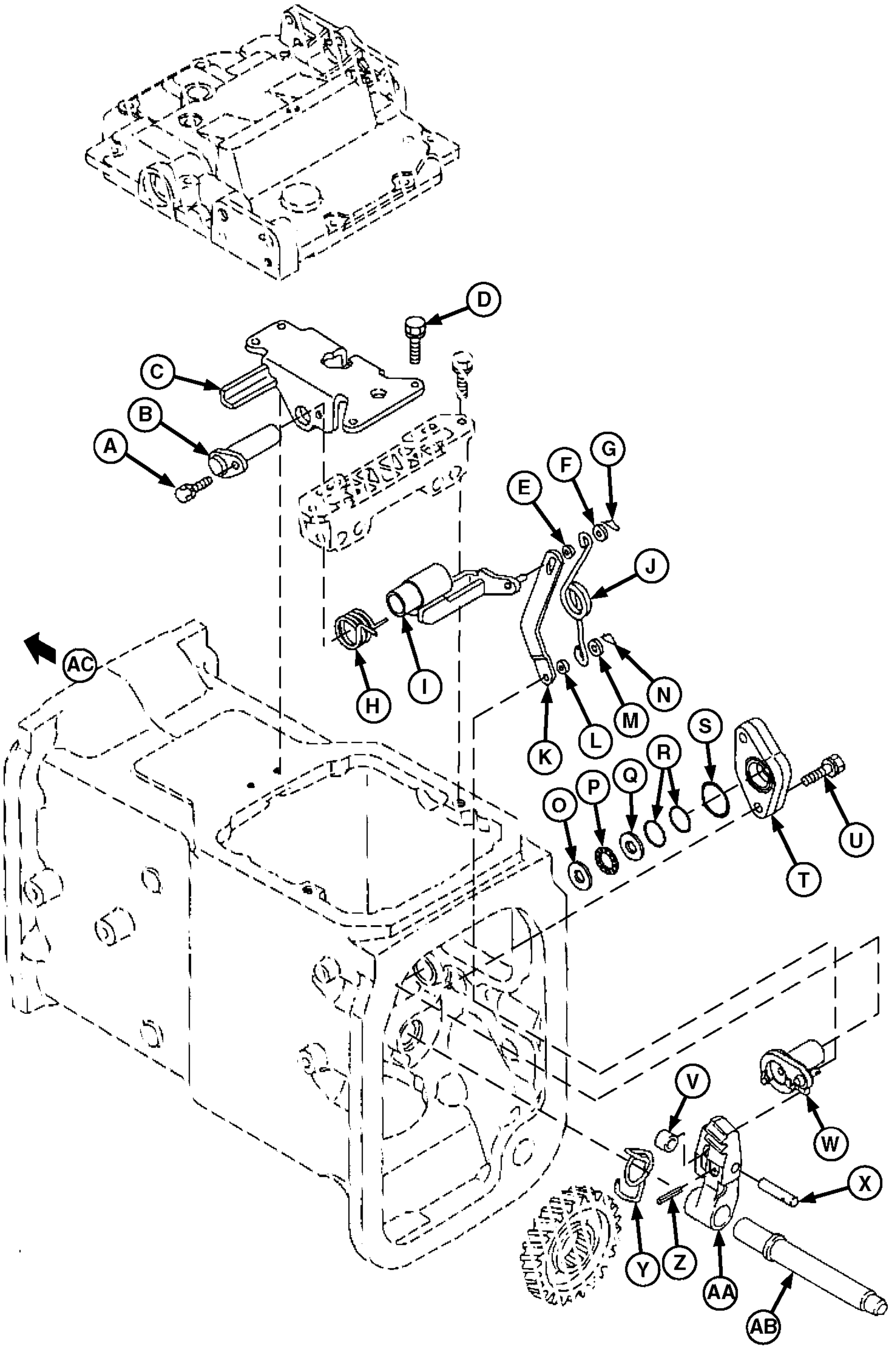
8. Remove cap screw (B).

9. Install parts (A) and (C—H).

10. Install cap screw (B).

Continued on next page

OUO1082,00002D3 –19–23SEP04–6/10


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB
AC

LV10967 –UN–04MAR05

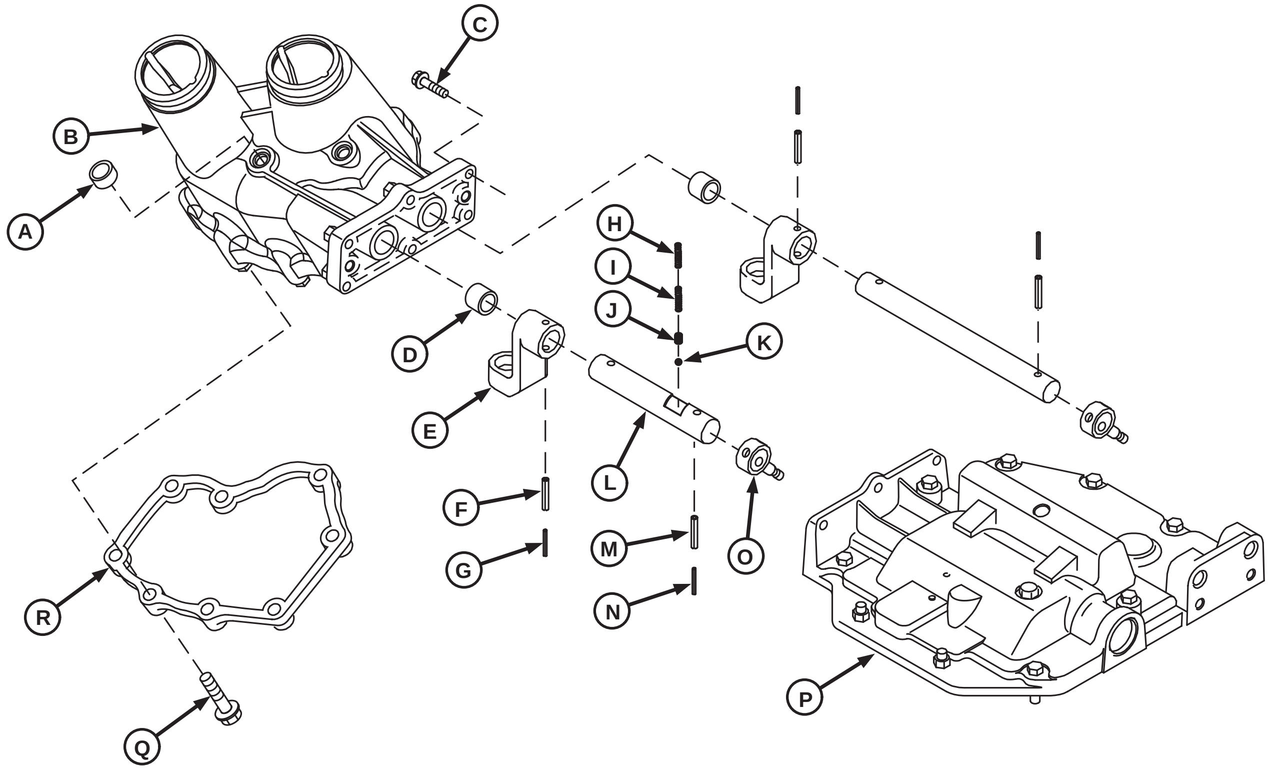
Continued on next page

A—Cap Screw
B—Shift Shaft
C—Park Lock Guide
D—Cap Screw (2 used)
E—Collar
F—Washer
G—Snap Pin
H—Spring
I—Shift Arm
J—Park Spring
K—Link
L—Collar
M—Washer
N—Snap Pin
O—Thrust Washer
P—Needle Bearing
Q—Thrust Washer
R—Shim
S—O-Ring
T—Park Pawl Cover
U—Cap Screw (2 used)
V—Roller
W—Cam
X—Pin
Y—Spring
Z—Pin
AA—Park Pawl
AB—Park Shaft
AC—Front of Tractor

11. Install parts (A—N) and (V—AB). Parts (O—U) will be installed after installing transmission.

Continued on next page

OUO1082,00002D3 –19–23SEP04–8/10



A—Plug (2 used)
B—Shift Lever Housing
C—Cap Screw (6 used)
D—Bushing (2 used)
E—Shift Lever (2 used)
F—Spring Pin (2 used)
G—Spring Pin (2 used)
H—Spring
I—Spring
J—Spring
K—Ball
L—Shift Shaft
M—Spring Pin
N—Spring Pin
O—Shift Arm
P—Transmission Cover
Q—Cap Screw (8 used)
R—Shift Lever Housing Cover

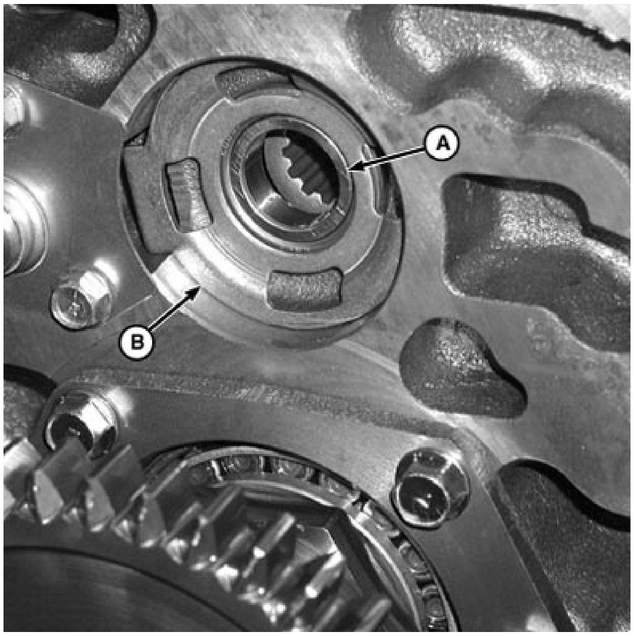
12. Clean mating surfaces and apply PM38656 Form-in-Place Gasket or equivalent sealer to shift lever housing (B). Install housing to transmission cover (P).
13. Install cap screws (C) and shift levers (E).
14. Install pins (F) and (G).
15. Clean mating surfaces and install shift lever housing cover (R) to shift lever housing (B) using TY15130 Form-in-Place Gasket or equivalent sealer.
16. Install cap screws (Q) and plugs (A).

Continued on next page

NOTE: Make sure that oil deflector is installed as shown in photo.

17. Install bearing (A) and oil deflector (B) into differential housing.

A—Bearing
B—Oil Deflector



LV10670 –UN–22SEP04

OUO1082,00002D3 –19–23SEP04–10/10

Install Transmission

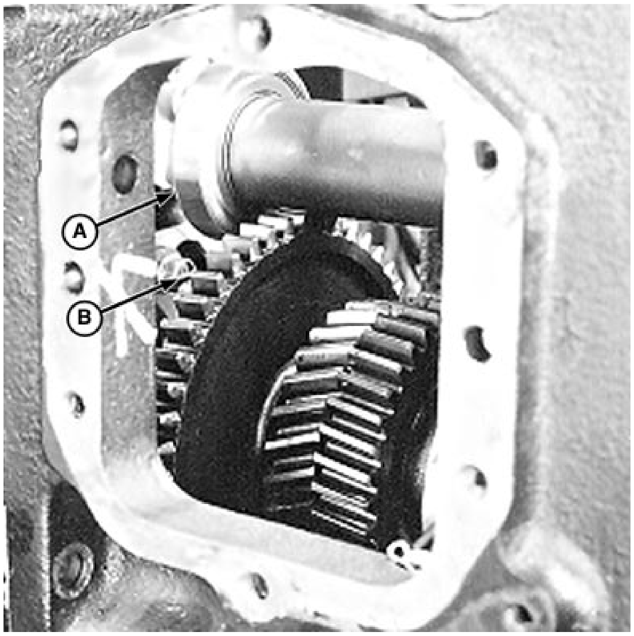
NOTE: POWRREVERSER™ transmissions and POWRREVERSER transmission with Electro-Hydraulic Hi/Lo are similar unless stated.

1. Clean mating surfaces of transmission case and differential housing using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

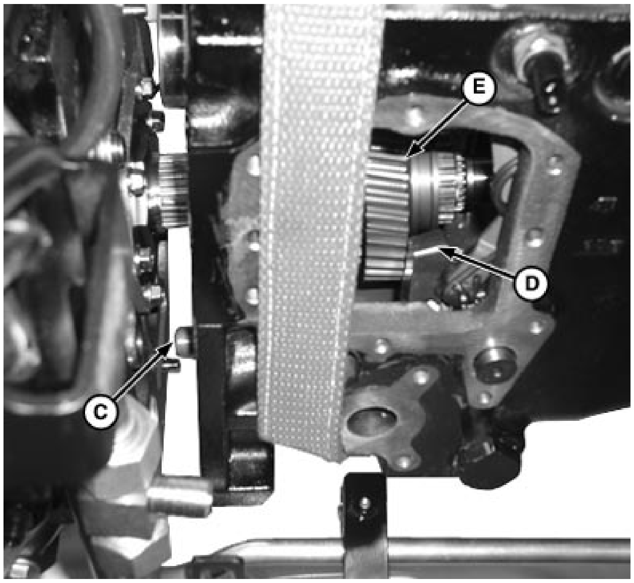
2. Position transmission approximately 127 mm (5 in.) from the differential case so bearing (A) is just past sliding gear (B).

NOTE: It may be necessary to rotate the transmission shafts during installation of transmission.

3. Install transmission. Make sure park pawl shaft (C) aligns with bore in differential case. Push park pawl (D) inward after clearing gear (E).



LV11097 –UN–07OCT04



LV11098 –UN–07OCT04

A—Bearing
B—A Range and Creeper Shift Sliding Gear
C—Park Pawl Shaft
D—Park Pawl
E—Gear

POWRREVERSER is a trademark of Deere & Company

Continued on next page

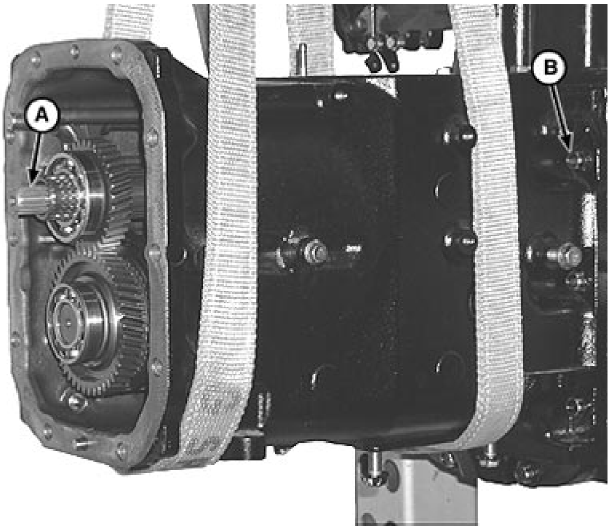
IMPORTANT: Do not draw transmission against differential housing using cap screws or damage will result. Make sure transmission and differential housing mating surfaces are completely together before tightening cap screws.

4. Install twelve cap screws (B) and tighten to specification.

Specification

Transmission-to-Differential Cap Screw—Torque.. 140 N•m (105 lb-ft)

5. Install PTO shaft (A).

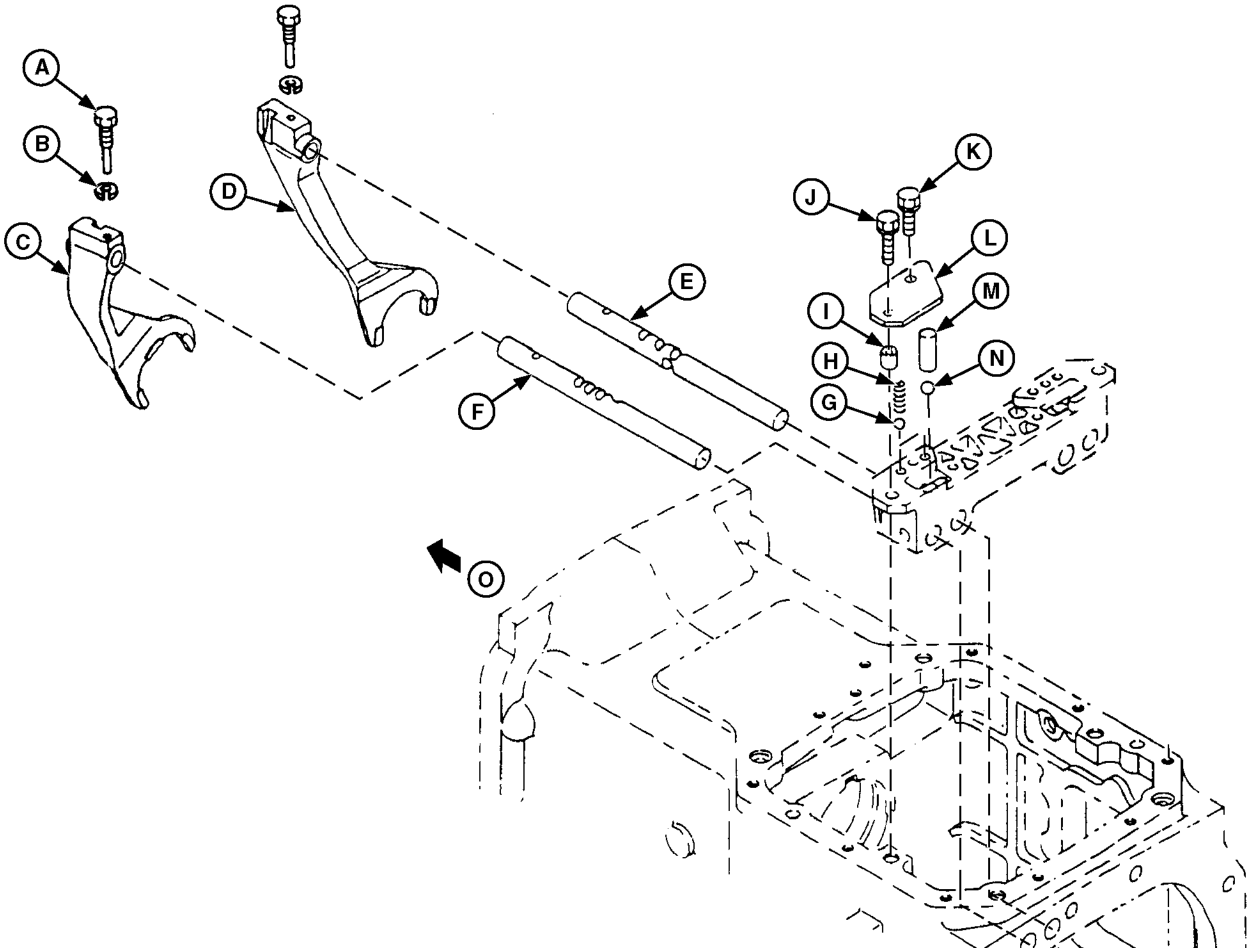


LV10666 –UN–22SEP04

A—PTO Shaft
B—Cap Screw (12 used)

Continued on next page

OUO6083,0007534 –19–16SEP04–2/11



A—Cap Screw (2 used)
B—Lock Washer (2 used)
C—B and C Range Shift Fork
D—A Range and Creeper Shift Fork
E—A Range and Creeper Shift Shaft
F—B and C Range Shift Shaft
G—Ball (2 used)
H—Spring (2 used)
I—Bushing
J—Cap Screw
K—Cap Screw
L—Plate
M—Pin
N—Ball
O—Front of Tractor

6. Remove cap screw (J) if installed.

7. Install shift forks (C) and (D).

8. Install shift shafts (E) and (F).

9. Clean cap screws (A) with Cure Primer. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws. Install lock washers (B) and cap screws (A).

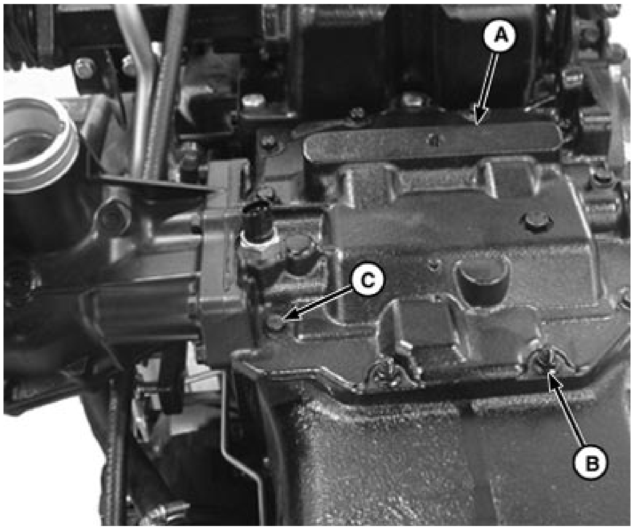
10. Install parts (G—N).

Continued on next page

11. Install transmission cover (A) using new gasket. Make sure shift arms are properly set in range and gearshift forks. Install cap screws (C) and nuts (B).

12. Place gearshift lever in shift housing and position gearshift lever in park.

A—Transmission Cover
B—Nut (2 used)
C—Cap Screw (8 used)



LV10669 –UN–22SEP04

OUO6083,0007534 –19–16SEP04–4/11

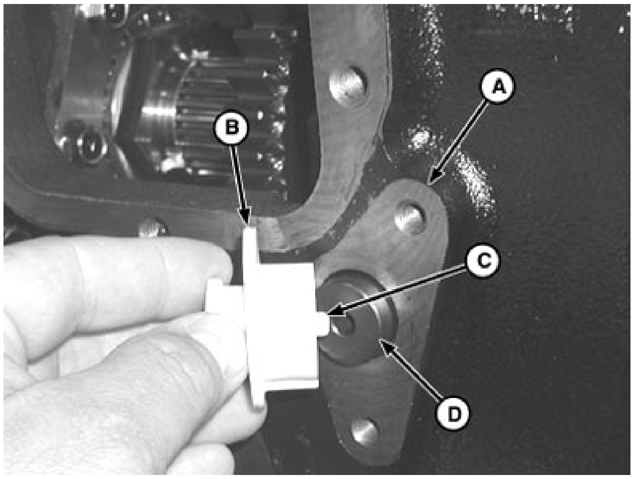
NOTE: Make sure machined surface (A) is clean to achieve proper measurement.

13. Position RE188114 Park Cam Shim Gauge (B) over cam shaft (D) with pin (C) inserted in center hole of cam shaft.

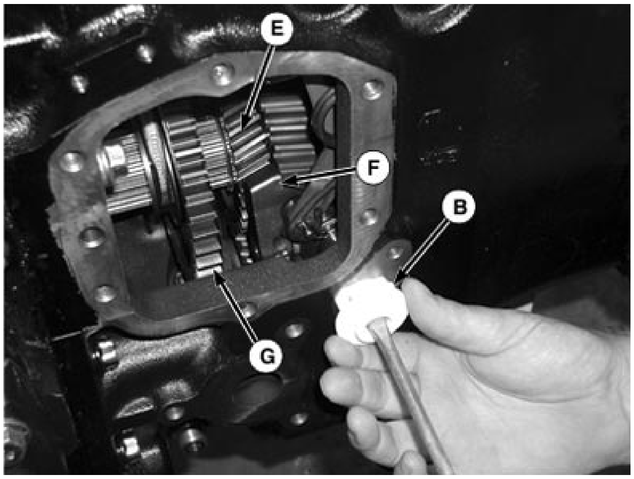
14. Hold shim gauge (B) in position and apply inward force in center of gauge, using a tool with a flat or blunt end as shown in photo.

15. Make sure park pawl (F) is fully engaged in gear (E) by rotating the A range gear (G).

A—Machined Surface
B—Park Cam Shim Gauge RE188114
C—Pin
D—Cam Shaft
E—Gear
F—Park Pawl
G—A Range Gear



LV10667 –UN–22SEP04



LV10660 –UN–20SEP04

Continued on next page

OUO6083,0007534 –19–16SEP04–5/11

16. While applying inward force, slide outer collar (B) of shim gauge forward until seated against machined surface (A) of transmission housing.

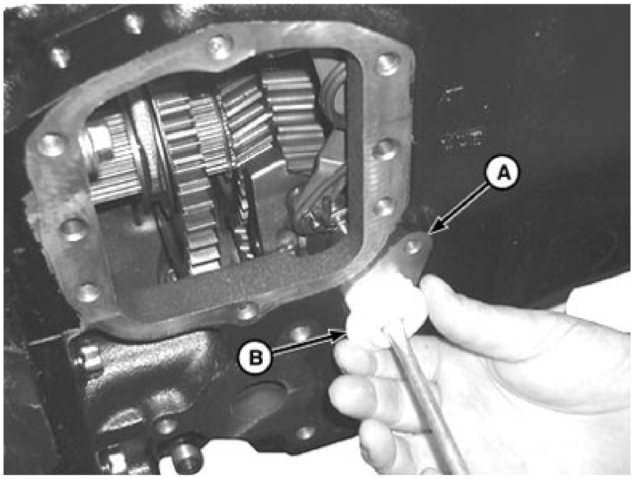
17. Remove fingers from shim gauge. Slowly and evenly remove the inward force applied to center of gauge by tool with flat or blunt end.

18. Carefully remove shim gauge from cam shaft. Make sure not to change shim gauge setting during removal.

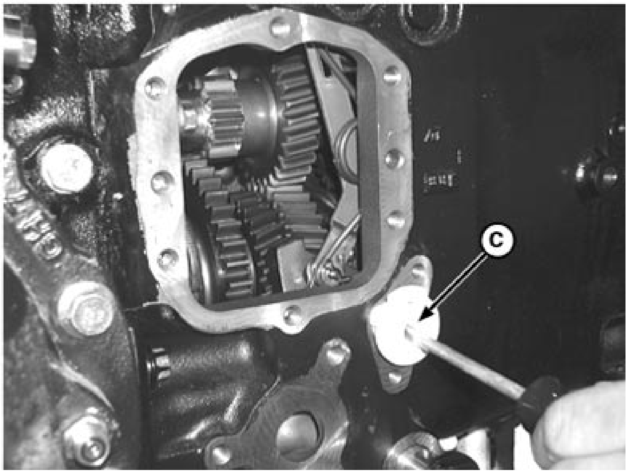
19. Install shims (D) one at a time, as necessary, between tab (E) and collar flange (F) in shim gauge. Do not force shims in gauge. Retain shims for installation into park cam cover.

NOTE: Two shims (D) were needed for shim gauge setting shown in photo.

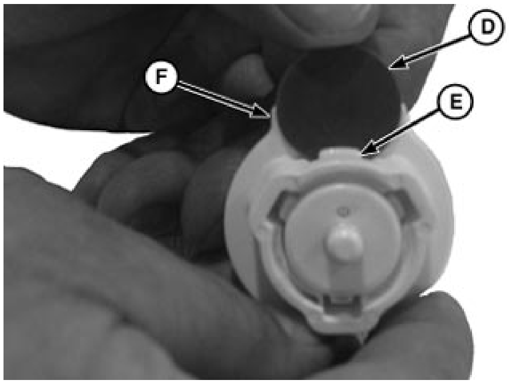
A—Machined Surface
B—Outer Collar
C—Park Cam Shim Gauge RE188114
D—Shims
E—Tab
F—Collar Flange



LV10661 –UN–22SEP04



LV10662 –UN–22SEP04



LV10663 –UN–22SEP04

Continued on next page

OUO6083,0007534 –19–16SEP04–6/11

20. Install shims (B) from shim gauge setting in park cam cover (A).

21. Install one thrust washer (C) on top of shims.

22. Apply multi-purpose grease to both sides of bearing (D).

23. Install bearing (D) on top of thrust washer.

24. Install remaining thrust washer (C) on top of bearing.

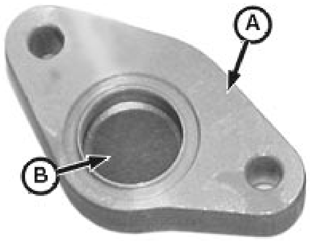
25. Apply multi-purpose grease to O-ring groove.

26. Install O-ring (E) in park cam cover (A).

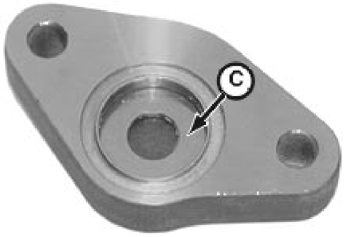
27. Place an identification mark (F) on side edge of cover closest to O-ring, as shown in photo, to aid during installation.

28. Place gearshift lever in neutral

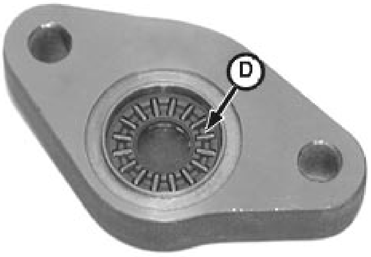
A—Park Cam Cover
B—Shim
C—Thrust Washer
D—Bearing
E—O-Ring
F—Identification Mark



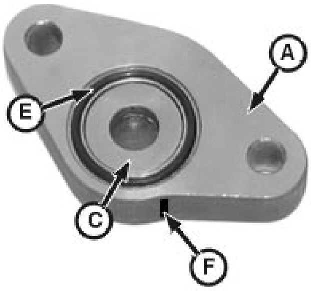
LV7356 –UN–12JUL01



LV7357 –UN–12JUL01



LV7358 –UN–12JUL01

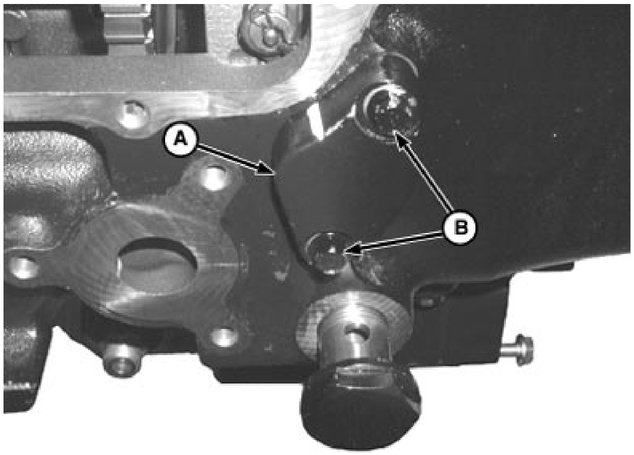


LV7359 –UN–28SEP01

Continued on next page

29. Install park cam cover (A) with identification mark made earlier facing rear of tractor. Use the protruding cam shaft to aid in alignment of cover. Make sure O-ring and thrust washer stay in position during installation.

30. Install two M8 x 35 cap screws (B). Tighten cap screws to specification.



LV10664 –UN–22SEP04

Specification

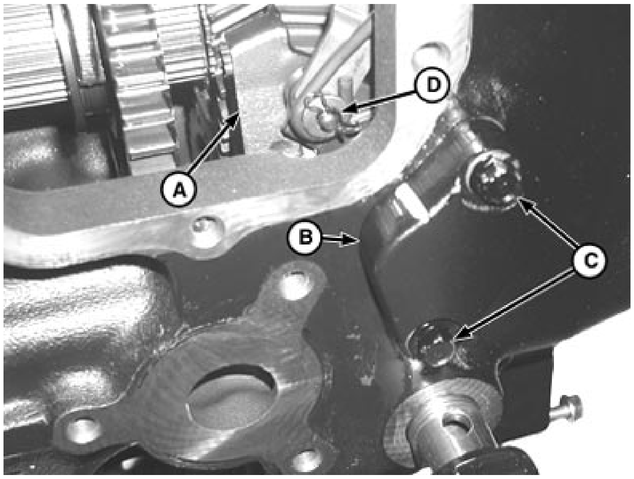
Park Pawl Cover Cap Screw—Torque	27 N•m (20 lb-ft)

A—Park Cam Cover
B—Cap Screw (2 used)

OUO6083,0007534 –19–16SEP04–8/11

31. Move gearshift lever from neutral to park position six or seven times. Leave gearshift lever in park position and verify the following items.

- Make sure park pawl (A) has movement by pushing inward on park pawl (A). If park pawl has no movement, recheck shimming process with shim gauge.
- If park pawl still has no movement after rechecking shimming process, remove park cam cover (B) and remove one shim from cover.
- Install park cam cover and tighten cap screws (C) to specification. Recheck park pawl for movement by pushing inward on park pawl (A).



LV10665 –UN–22SEP04

Specification

Park Pawl Cover Cap Screw—Torque	27 N•m (20 lb-ft)

A—Park Pawl
B—Park Cam Cover
C—Cap Screw (2 used)
D—Spring Pin

IMPORTANT: Make sure spring pin (D) is installed properly before installing side cover.

- Position gearshift lever in neutral and check that the spring pin (D) remains hooked, as shown in photo.

Continued on next page

OUO6083,0007534 –19–16SEP04–9/11

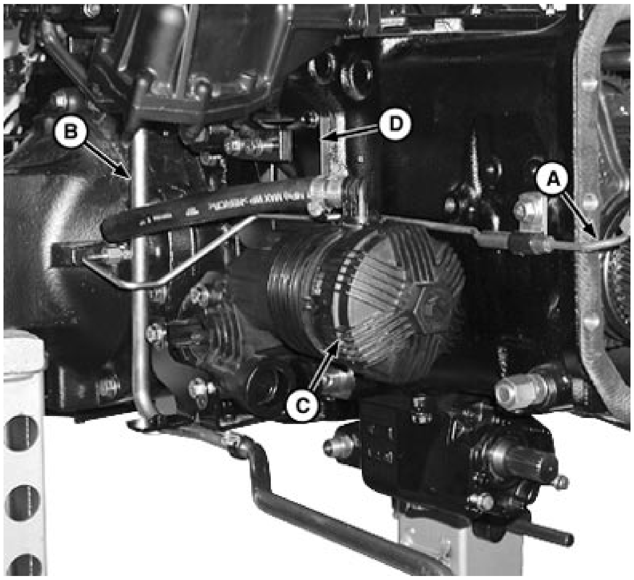
32. Install right-side cover (D) or creeper assembly, if equipped. (See Remove and Install Creeper Assembly in Section 50, Group 40.)

33. Install hydraulic oil filter assembly (C). (See Remove and Install Hydraulic Oil Filter/Manifold in Section 70, Group 05.)

34. Install hydraulic inlet line (B).

35. Install brake lines on right (A) and left sides of transmission.

36. Install lower cover or MFWD drop gearbox, if equipped. (See Remove and Install MFWD Drop Gearbox in Section 50, Group 35.)



LV10685 –UN–23SEP04

A—Right-Side Brake Line
B—Hydraulic Inlet Line
C—Hydraulic Oil Filter Assembly
D—Side Cover

Continued on next page

OUO6083,0007534 –19–16SEP04–10/11

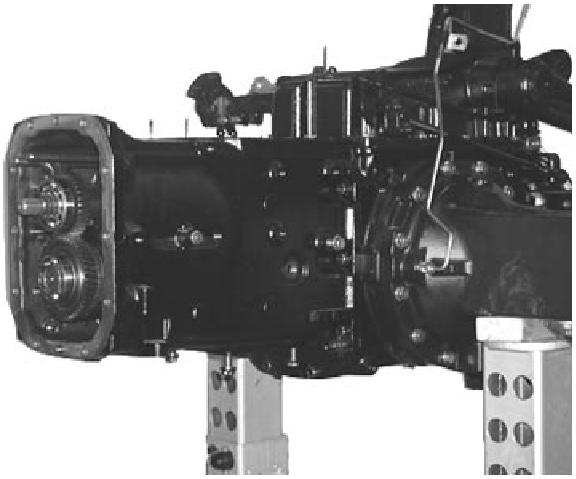
37. Straddle mount tractors: Install PTO lever and linkage. (See Remove, Inspect and Install Rear PTO Lever and Linkage—Straddle Mount in Section 50, Group 20.)

38. Straddle mount tractors: Install 540/540E lever and linkage, if equipped. (See Inspect and Repair PTO 540/540E Shift Lever and Linkage—Straddle Mount in Section 50, Group 20.)

39. Straddle mount tractors: Install left-side fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

40. Straddle mount tractors: Install right- and left-side control console. (See Remove and Install Right-Side Control Console—Straddle Mount and Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.)

41. Install clutch housing to transmission. (See Install Clutch Housing to Transmission—Straddle Mount in Section 50, Group 15.)



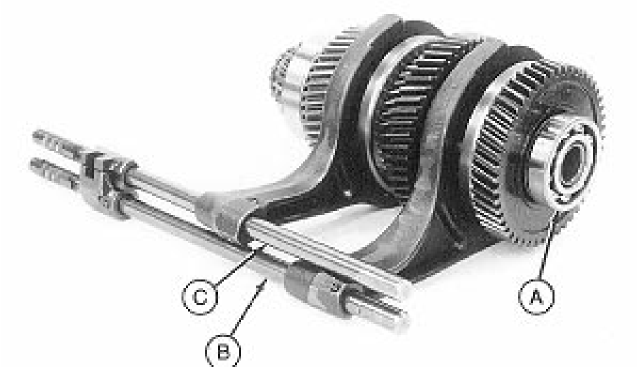
OUO6083,0007534 –19–16SEP04–11/11

Disassemble, Inspect, and Assemble Gearshift Shaft Assemblies

NOTE: POWRREVERSER™ transmissions and POWRREVERSER transmission with Electro-Hydraulic Hi/Lo are similar unless stated.

1. Remove shift shaft assemblies (B and C) from transmission bottom shaft (A).

A—Transmission Bottom Shaft
B—Reverse and 2nd Gearshift Shaft Assembly
C—1st and 3rd Gearshift Shaft Assembly

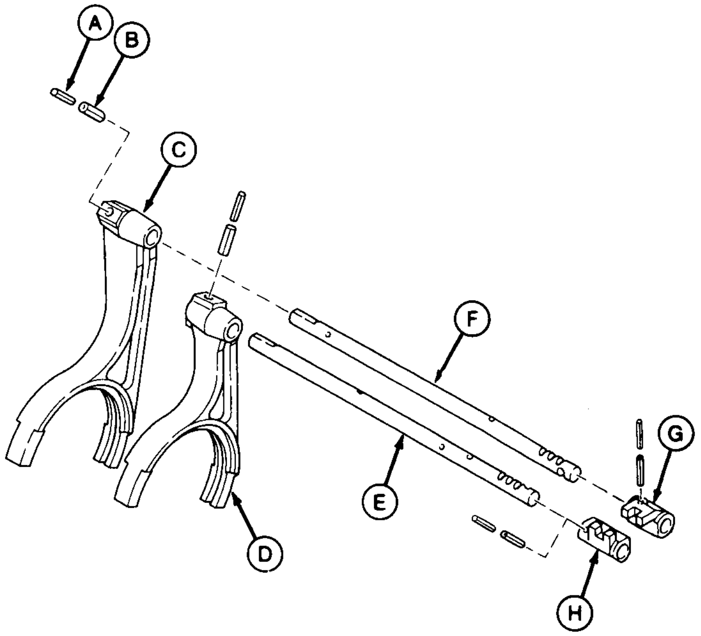


POWRREVERSER Synchronized Bottom Shaft

POWRREVERSER is a trademark of Deere & Company

Continued on next page

OUO1082,00002D4 –19–23SEP04–1/2



LV1239A –UN–21DEC94

A—Small Spring Pin (4 used)	**C—1st and 2nd Gearshift Fork**	**E—3rd and 4th Gearshift Shaft**	**G—1st and 2nd Gearshift Yoke**
B—Large Spring Pin (4 used)	**D—3rd and 4th Gearshift Fork**	**F—1st and 2nd Gearshift Shaft**	**H—3rd and 4th Gearshift Yoke**

2. Mark position and location of yokes (G and H) and forks (C and D) on shafts to aid in assembly.

3. Drive out spring pins (A and B).

4. Disassemble parts.

5. Inspect parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

IMPORTANT: Install small pins (A) inside large pins (B) with splits facing 180° (opposite) from each other.

6. Assemble all parts.

7. Install shift shaft assemblies to transmission bottom shaft.

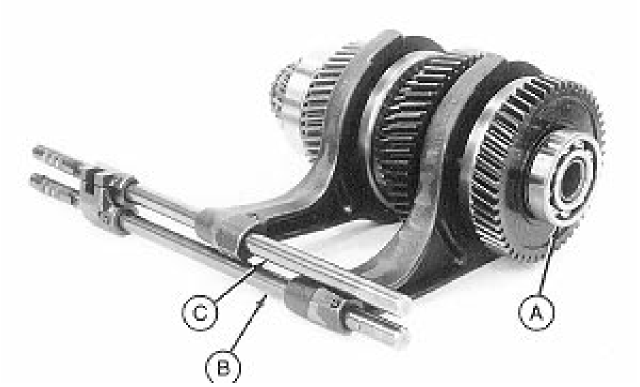
OUO1082,00002D4 –19–23SEP04–2/2

Disassemble, Inspect, and Assemble Transmission Bottom Shaft

NOTE: POWRREVERSER™ transmissions and POWRREVERSER transmission with Electro-Hydraulic Hi/Lo are similar unless stated.

1. Remove 1st and 2nd gearshift shaft assembly (B) from transmission bottom shaft (A).

2. Remove 3rd and 4th gearshift shaft assembly (C) from transmission bottom shaft (A).



LV1248 –UN–21DEC94

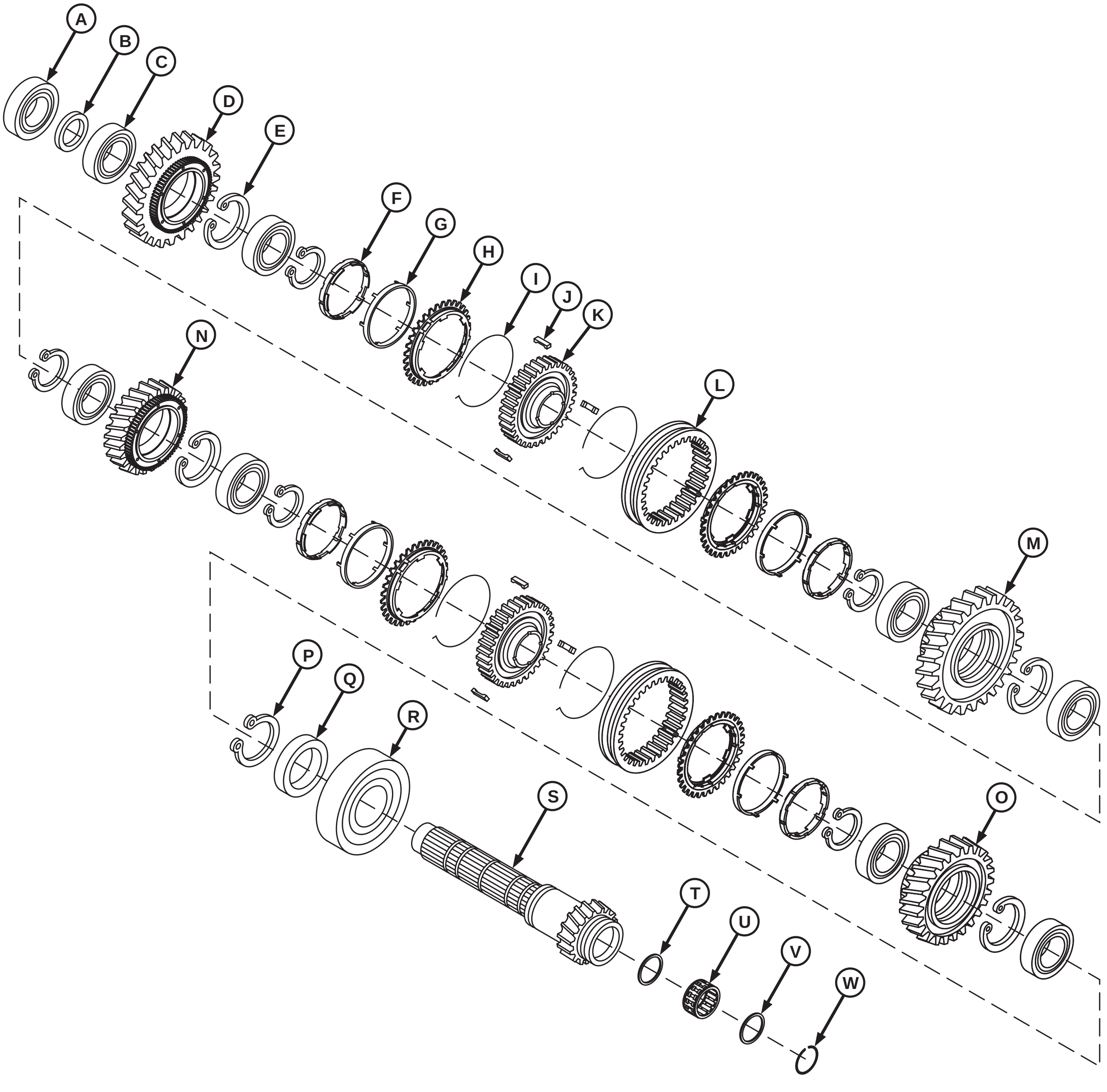
Bottom Shaft—POWRREVERSER

A—Transmission Bottom Shaft
B—1st and 2nd Gearshift Shaft Assembly
C—3rd and 4th Gearshift Shaft Assembly

POWRREVERSER is a trademark of Deere & Company

Continued on next page

OUO1082,00002D5 –19–23SEP04–1/5



Transmission Bottom Shaft Without EH Hi/Lo—Exploded View

A—Bearing
B—Spacer
C—Bearing (8 used)
D—2nd Speed Driven Gear
E—Snap Ring
F—Inner Synchronizer
G—Cone
H—Outer Synchronizer
I—Spring
J—Key
K—Hub
L—Collar
M—1st Speed Driven Gear
N—4th Speed Driven Gear
O—3rd Speed Driven Gear
P—Snap Ring
Q—Spacer
R—Bearing
S—Driven Shaft
T—Spacer
U—Needle Bearing
V—Spacer
W—Snap Ring

Continued on next page

POWRREVERSER Transmission Without EH Hi/Lo

NOTE: Bearing (A) is press fit on shaft (S). Use a knife-edged puller and a press to remove bearing.

To aid in assembly, keep parts together and in proper sequence as the gear cluster is disassembled.

1. Remove parts (A—W).

2. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

3. Apply lithium grease with molybdenum disulphide to ID of gears (D, M, N, and O).

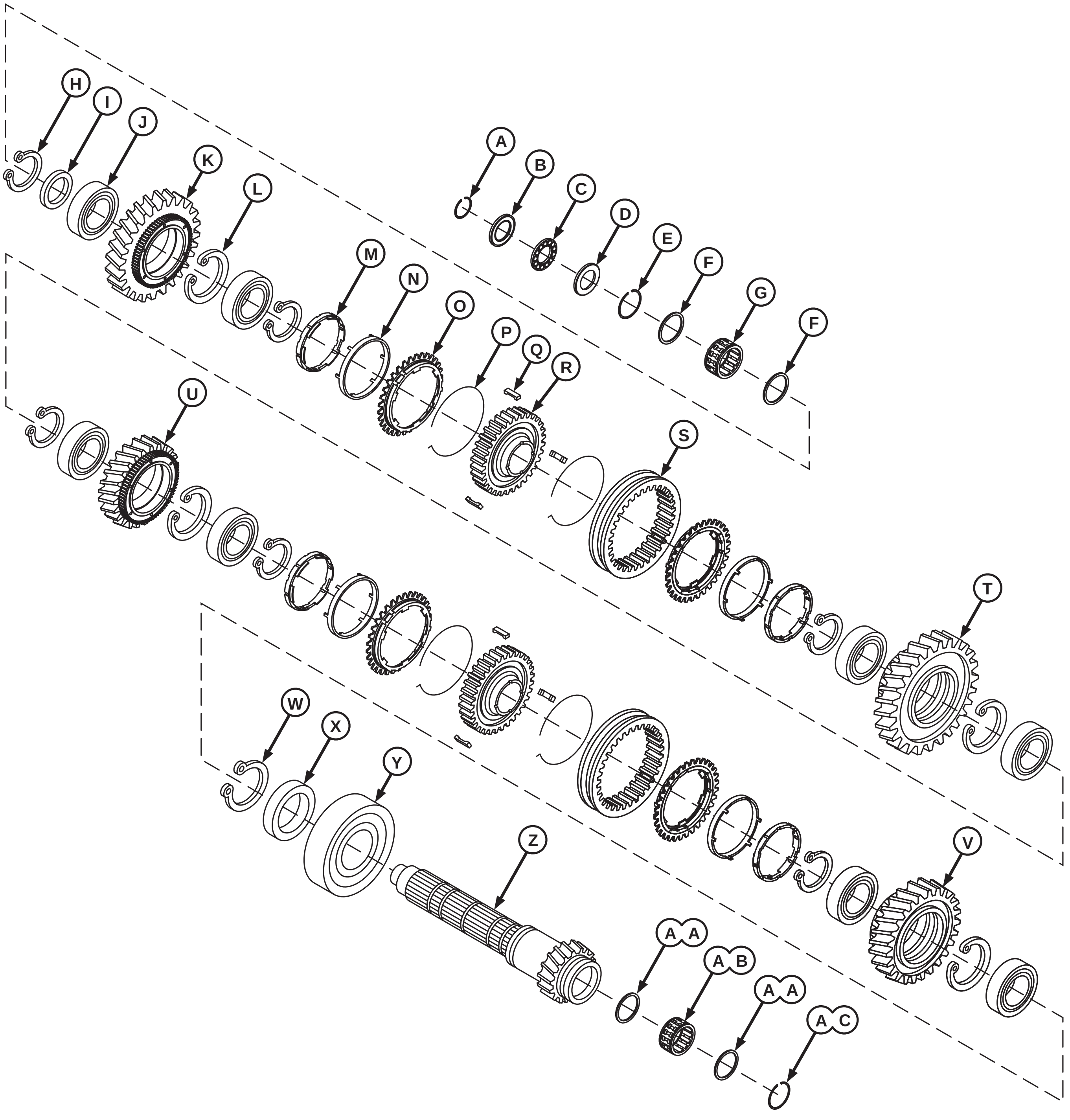
4. Install parts (B—W).

5. Install bearing (A) using a bushing, bearing, and seal driver set and a press.

6. Install shift shaft assemblies to the transmission bottom shaft.

Continued on next page

OUO1082,00002D5 –19–23SEP04–3/5



Transmission Bottom Shaft With EH Hi/Lo—Exploded View

A—Snap Ring
B—Front Bearing Race (Black)
C—Bearing
D—Rear Bearing Race (Silver)
E—Snap Ring
F—Spacer
G—Needle Bearing
H—Snap Ring
I—Spacer
J—Bearing (8 used)
K—2nd Speed Driven Gear
L—Snap Ring (4 used)
M—Inner Synchronizer
N—Cone
O—Outer Synchronizer
P—Spring (4 used)
Q—Key
R—Hub
S—Collar
T—1st Speed Driven Gear
U—4th Speed Driven Gear
V—3rd Speed Driven Gear
W—Snap Ring
X—Spacer
Y—Bearing
Z—Driven Shaft
AA—Spacer
AB—Needle Bearing
AC—Snap Ring

Continued on next page

POWRREVERSER Transmission With EH Hi/Lo

NOTE: To aid in assembly, keep parts together and in proper sequence as the gear cluster is disassembled.

1. Remove parts (A—AC).

2. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

3. Apply lithium grease with molybdenum disulphide to ID of gears (K, T, U, and V).

IMPORTANT: Front bearing race (black) (B) and rear bearing race (silver) (D) MUST be installed with grooved surface facing bearing (C).

Front bearing race (black) (B) MUST be installed after rear bearing race (silver) (D) and bearing (C) have been installed on driven shaft (Z).

4. Install all parts.

5. Install shift shaft assemblies to the transmission bottom shaft.

OUO1082,00002D5 –19–23SEP04–5/5

Disassemble, Inspect, and Assemble Range Reduction Shaft

NOTE: Bearings (A and G) are press fit on shaft.

1. Remove bearings (A and G) using a knife-edged puller and a press.

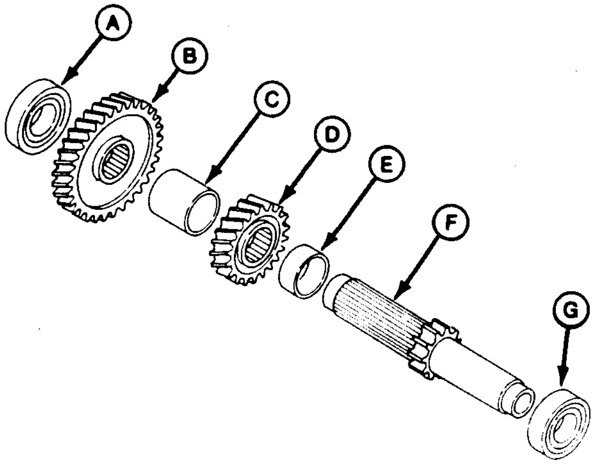
2. Remove all parts.

3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Install all parts.

   Install bearings (A and G) using a bearing, bushing, and seal driver set and a press.



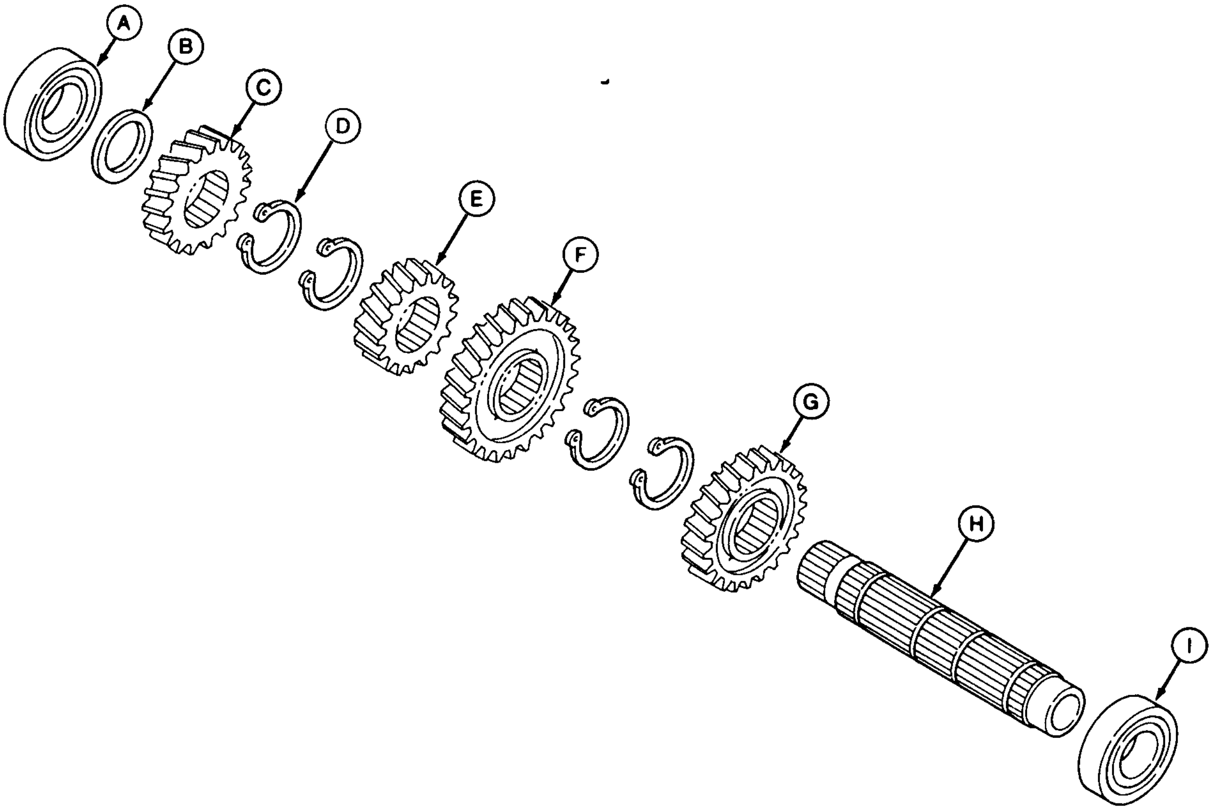
LV478A –UN–03MAR92

LV477 –UN–03MAR92

A—Bearing
B—Range Reduction Drive Gear
C—Collar
D—2nd Range Drive Gear
E—Collar
F—Range Reduction Shaft
G—Bearing

OUO1082,00002D6 –19–23SEP04–1/1

Disassemble, Inspect, and Assemble Top Shaft



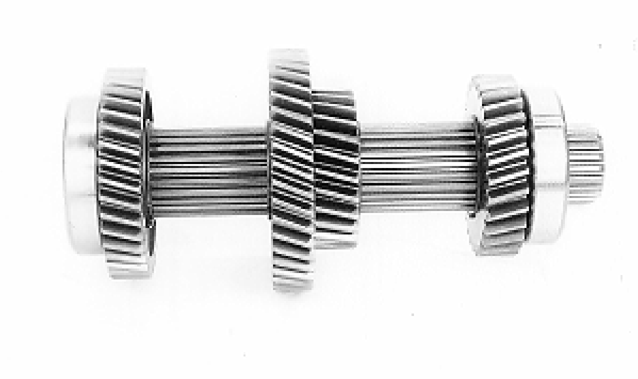
LV1241A –UN–21DEC94

NOTE: On POWRREVERSER™ transmission without EH Hi/Lo front bearing (A) is press fit to shaft (H).

On POWRREVERSER transmission with EH Hi/Lo front bearing (A) will remain in clutch housing.

On all transmissions, rear bearing (I) is press fit on shaft (H).

1. Remove bearing (A), if equipped, using a knife-edged puller and a press.
2. Remove parts (B—G).
3. Remove bearing (I) using a knife-edged puller and a press.
4. Inspect all parts for wear or damage. Replace as necessary.



LV1255 –UN–21DEC94

POWRREVERSER Without EH Hi/Lo Top Shaft

A—Bearing
B—Washer
C—2nd Speed Drive Gear
D—Snap Ring (4 used)
E—1st Speed Drive Gear
F—4th Speed Drive Gear
G—3rd Speed Drive Gear
H—Shaft
I—Bearing

POWRREVERSER is a trademark of Deere & Company

Continued on next page

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

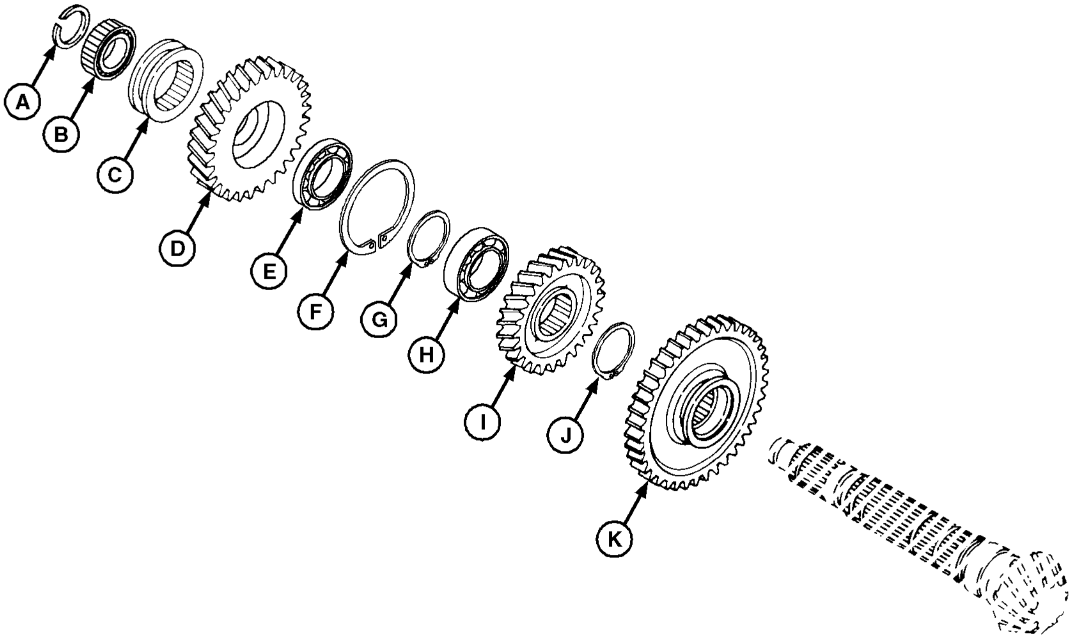
5. Install bearing (I) using a bushing, bearing, and seal driver set and a press.

6. Install parts (B—G).

7. Install bearing (A), if equipped, using a bearing, bushing, and seal driver set and a press.

OUO1082,00002D7 –19–23SEP04–2/2

Remove, Inspect, and Install MFWD and Range Gears



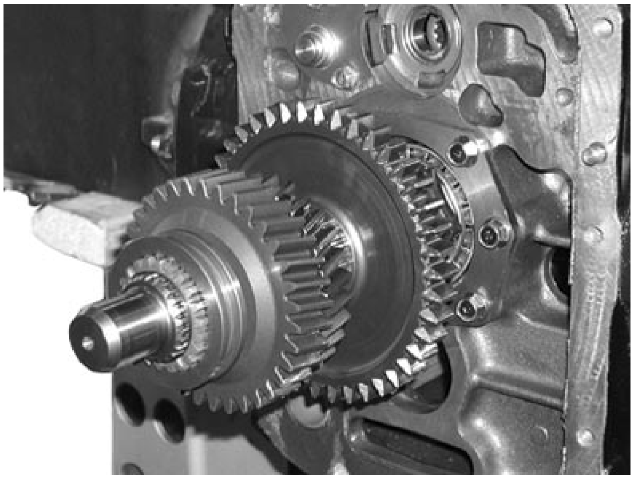
LV11074 –UN–25OCT04

NOTE: If it is necessary to remove the entire shaft, see Remove and Inspect Differential Drive Shaft and Install Differential Drive Shaft in Section 50, Group 25.

1. Remove transmission. (See Remove Transmission in Section 50, Group 16.)
2. Remove parts (A—K).
3. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

4. Apply lithium grease with molybdenum disulphide to ID of shifter collar (C), and gears (D) and (K).
5. Install all parts (A—K).
6. Install transmission.



LV10671 –UN–20SEP04

A—Snap Ring
B—Spline Collar
C—Shifter Collar
D—B Range Driven Gear
E—Bearing
F—Snap Ring
G—Snap Ring
H—Bearing
I—MFWD Gear
J—Snap Ring
K—A Range and Creeper Shift Sliding Gear

OUO1082,00002E4 –19–04OCT04–1/1

Group 20
Rear PTO Drive Shaft

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO6046,0009C41 –19–15SEP04–1/3

Bushing, Bearing, and Seal Driver Set

Used to replace bushings on PTO lever and linkage.

OUO6046,0009C41 –19–15SEP04–2/3

Snap Ring Removal Tool[1] DFT1162

Remove/Install Piston Spring

[1] Fabricated Tool. See Section 99, Group 05 for instructions to fabricate tool.

OUO6046,0009C41 –19–15SEP04–3/3

Other Material

Number	**Name**	**Use**
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to shaft of cap screws on PTO lever and linkage.

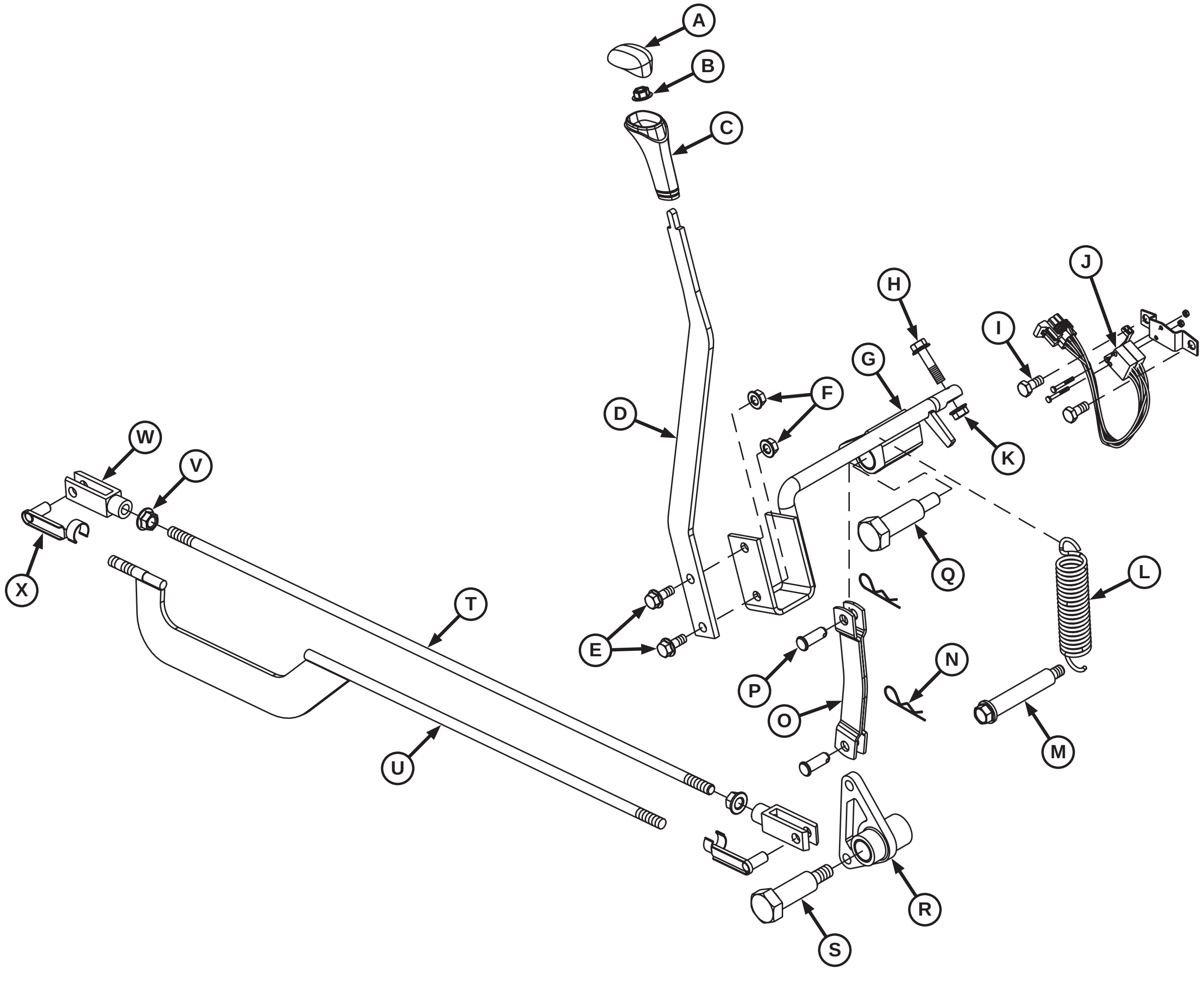
OUO6046,0009C42 –19–15SEP04–1/1

Specifications

Item	Measurement	Specification
PTO Drive Shaft Assembly Cap Screw	Torque	65 N•m (48 lb-ft)
PTO Inlet Port Banjo Fitting	Torque	44 N•m (32 lb-ft)
Lube Inlet Port Banjo Fitting	Torque	74 N•m (55 lb-ft)
Piston Spring	Minimum Height	38.5 mm (1.51 in.)
EH PTO Disk	Minimum Thickness	1.78 mm (0.070 in.)
EH PTO Clutch End Plate	Minimum Thickness	3.82 mm (0.150 in.)
EH PTO Clutch Plate	Minimum Thickness	2.15 mm (0.084 in.)
EH PTO Valve Cap Screws	Torque	25 N•m (18 lb-ft)

JG31785,000022E –19–02DEC04–1/1

Remove, Inspect and Install Rear PTO Lever and Linkage—Straddle Mount



A—Knob Insert
B—Nut
C—Knob
D—Lever
E—Cap Screw (2 used)
F—Nut (2 used)
G—Hub
H—Cap Screw
I—Cap Screw (2 used)
J—Switch
K—Nut
L—Spring
M—Cap Screw
N—Spring Pin (2 used)
O—Link
P—Pin (2 used)
Q—Cap Screw
R—Bellcrank
S—Cap Screw
T—Rod (SYNCSHUTTLE™ Transmissions)
U—Rod (POWRREVERSER™ Transmissions)
V—Nut
W—Yoke (2 used)
X—Spring Locking Pin (2 used)

1. Remove left-side control console. (See Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.).
2. Inspect all parts (A—X) for wear or damage. Replace as necessary.

SYNCSHUTTLE is a trademark of Deere & Company
POWRREVERSER is a trademark of Deere & Company

Continued on next page

3. Apply Moly High Temperature EP Grease to shaft of cap screws (Q and S).

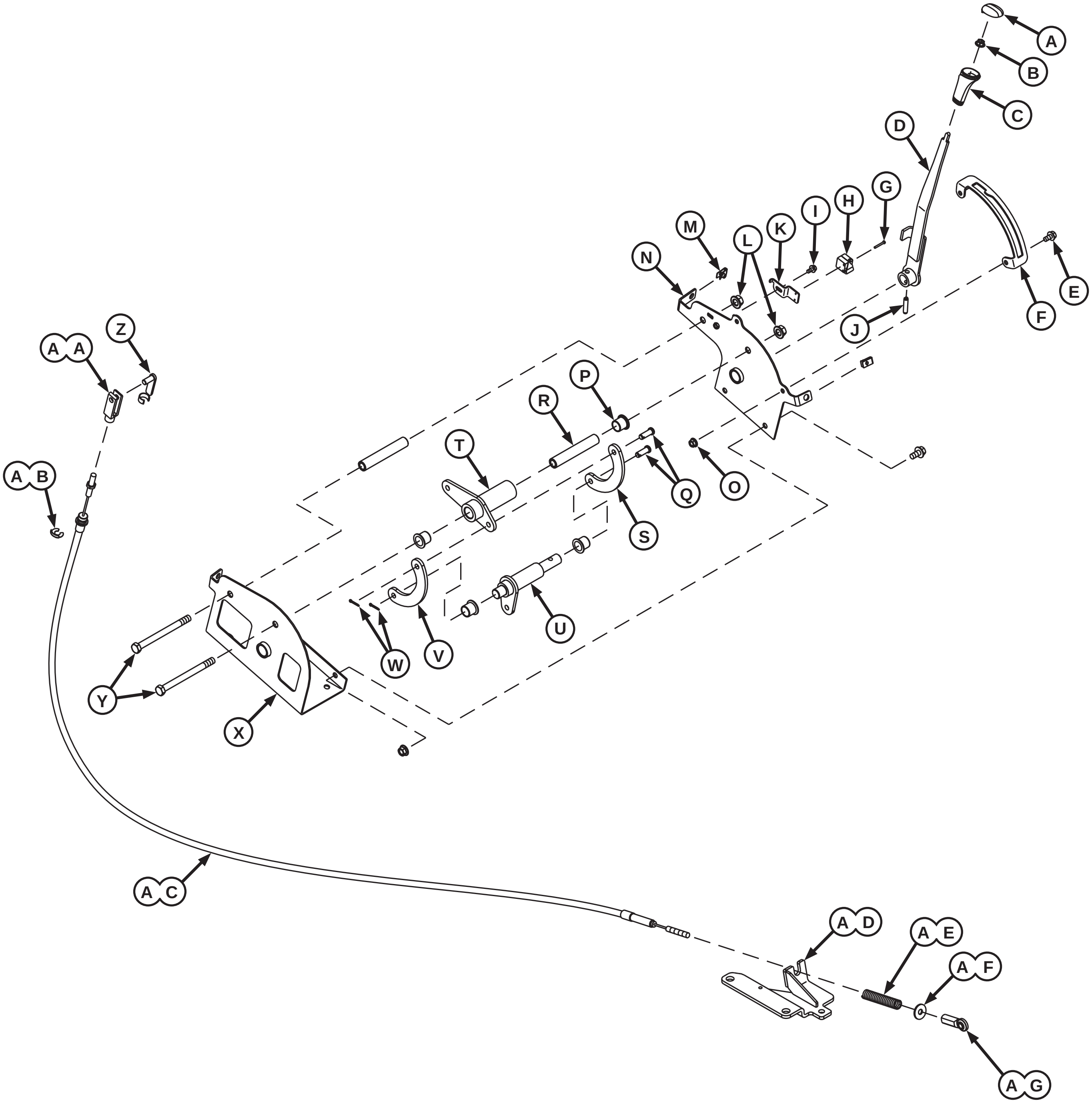
4. Install left-side control console. (See Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.).

5. Adjust PTO clutch lever. (See Reference 256-15-003, PTO Clutch Lever Linkage Adjustment-Straddle Mount in TM2197 Section 256, Group 15.)

6. Adjust clutch pedal free play. (See Reference 251-15-001, Checking and Adjusting Clutch Pedal Free Play in TM2197 Section 251, Group 15.)

OUO6046,0009C44 –19–15SEP04–2/2

Remove, Inspect and Install Rear PTO Lever and Linkage—Isolated Open Operator Station and Cab Tractors


A
B
C
D
G
H
I
K
L
M
N
E
F
J
Z
AA
P
R
T
Q
O
AB
S
U
W
V
Y
X
AC
AD
AE
AF
AG

LV10639 –UN–28OCT04

50
20
5

Continued on next page

A—Knob Insert
B—Nut
C—Knob
D—Lever
E—Cap Screw
F—Gate
G—Cap Screw (2 used)
H—Switch
I—Cap Screw
J—Spring Pin
K—Bracket
L—Nut
M—Nut (3 used)
N—Support
O—Nut (2 used)
P—Bushing (4 used)
Q—Pin Fastener (2 used)
R—Spacer (2 used)
S—Link
T—Crank
U—Bellcrank
V—Link
W—Cotter Pin (2 used)
X—Support
Y—Cap Screw (2 used) (Cab Tractors Only)
Z—Spring Locking Pin
AA—Yoke
AB—Clip
AC—Cable
AD—Bracket
AE—Compression Spring
AF—Washer
AG—End

1. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)

2. Inspect all parts (A—AG) for wear or damage. Replace as necessary.

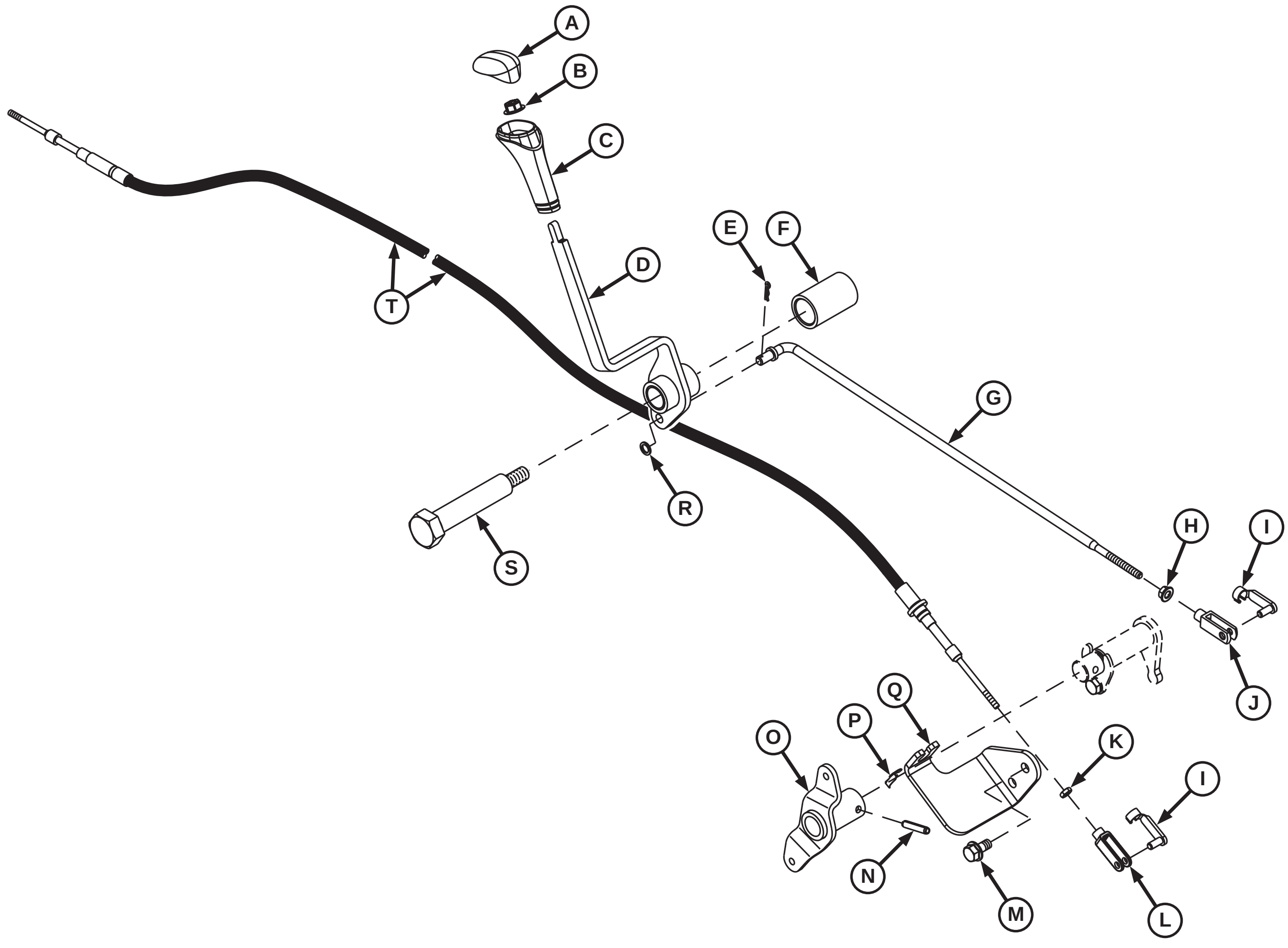
3. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)

4. Adjust PTO clutch lever. (See Reference 256-15-003, PTO Clutch Lever Linkage Adjustment-Straddle Mount in TM2197 Section 256, Group 15.)

5. Adjust clutch pedal free play. (See Reference 251-15-001, Checking and Adjusting Clutch Pedal Free Play in TM2197 Section 251, Group 15.)

OUO6046,0009C45 –19–15SEP04–2/2

Inspect and Repair PTO 540/540E Shift Lever and Linkage—Straddle Mount



LV10638 –UN–23SEP04

A—Knob Insert
B—Nut
C—Knob
D—Lever
E—Cotter Pin
F—Spacer
G—Rod
H—Nut
I—Spring Locking Pin
J—Yoke (Rod)
K—Jam Nut
L—Yoke (Cable)
M—Cap Screw
N—Spring Pin
O—Bellcrank
P—C-Clip
Q—Bracket
R—Washer
S—Cap Screw
T—Cable

NOTE: 540/1000 shift lever and linkage is similar.

540/1000 does not use throttle control cable.

1. Remove left-side control console. (See Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.)

2. Inspect all parts (A—T) for wear or damage. Replace as necessary.

3. Apply Moly High Temperature EP Grease to shaft of cap screw (S).

4. Install left-side control console. (See Remove and Install Left-Side Control Console—Straddle Mount in Section 90, Group 06.)

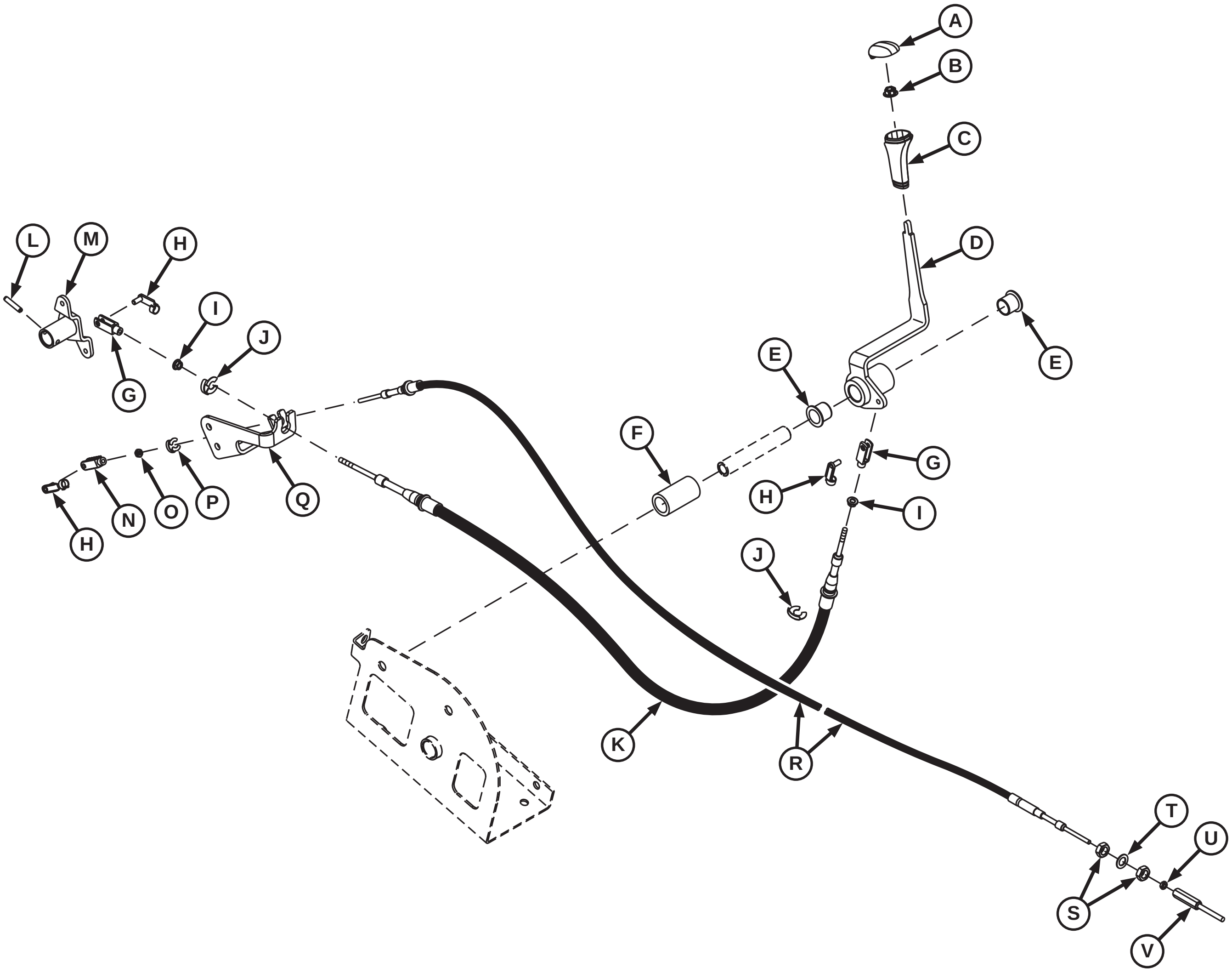
Continued on next page

OUO6046,0009C46 –19–15SEP04–1/2

5. Adjust PTO 540/540E shift lever and linkage. (SeeReference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)

OUO6046,0009C46 –19–15SEP04–2/2

Inspect and Repair PTO 540/540E Shift Lever and Linkage—Isolated Open Operator Station and Cab Tractors



LV10637 –UN–23SEP04

A—Knob Insert
B—Nut
C—Knob
D—Lever
E—Bushing (2 used)
F—Spacer
G—Yoke (2 used)
H—Spring Locking Pin (3 used)
I—Nut (2 used)
J—Clip (2 used)
K—540/540E Shift Cable
L—Spring Pin
M—Crank
N—Yoke
O—Nut
P—Clip
Q—Bracket
R—Throttle Control Cable
S—Jam Nut (2 used)
T—Washer
U—Nut
V—End

NOTE: 540/1000 shift lever and linkage is similar.

540/1000 does not use throttle control cable.

1. Remove left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)
2. Inspect all parts (A—V) for wear or damage. Replace as necessary.

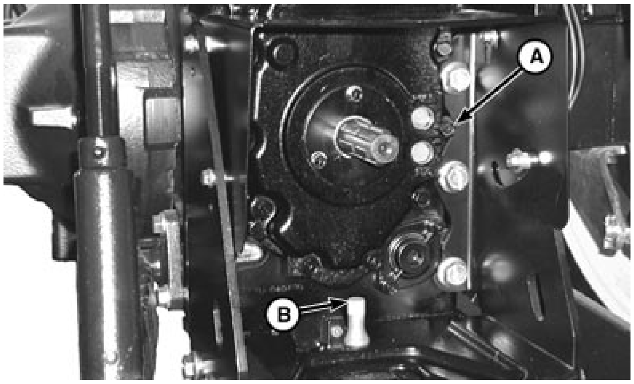
Continued on next page

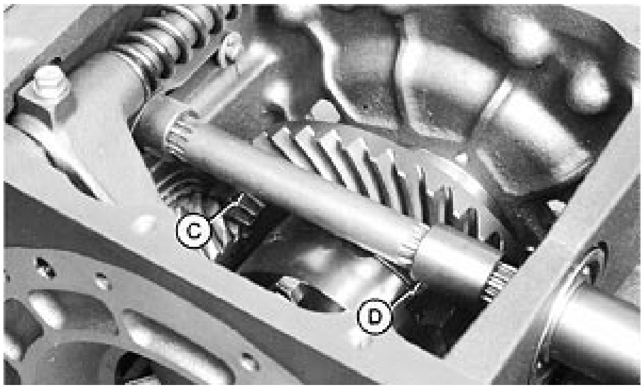
3. Install left-side control console. (See Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Left-Side Control Console—Cab Tractors in Section 90, Group 06.)

4. Adjust PTO 540/540E shift lever and linkage. (SeeReference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)

OUO6046,0009C47 –19–15SEP04–2/2

Remove and Install Standard and 540/540E Rear PTO Drive Shaft Assembly





A—Cap Screw (10 used)
B—Drawbar Pin
C—Intermediate Shaft
D—Coupler

1. Drain transmission/differential.

2. Remove PTO shield.

3. Remove drawbar pin (B) and drawbar.

4. Remove ten cap screws (A), rear PTO drive shaft assembly, and gasket.

NOTE: Parts (D and C) may remove with rear PTO drive shaft assembly.

Rockshaft is removed for detail of photo only.

5. Make repairs as necessary. (See Disassemble, Inspect and Assemble Standard Rear PTO Drive Shaft Assembly; Disassemble, Inspect, and Assemble Rear 540/540E PTO Drive Shaft Assembly; or Disassemble, Inspect, and Assemble Rear 540/1000 Standard PTO Drive Shaft Assembly in Section 50, Group 20.)

6. Apply Moly High Temperature EP Grease to splined ends of intermediate shaft PTO pinion shaft (top shaft).

7. Install intermediate shaft and coupler.

8. Install rear PTO drive shaft assembly and new gasket.

9. Install new gasket, rear PTO drive shaft assembly, and cap screws (A). Tighten cap screws to specification.

Specification	
PTO Drive Shaft Assembly Cap Screw—Torque	65 N•m (48 lb-ft)

10. Install drawbar and pin.

11. Install PTO shield.

12. Fill transmission/differential with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

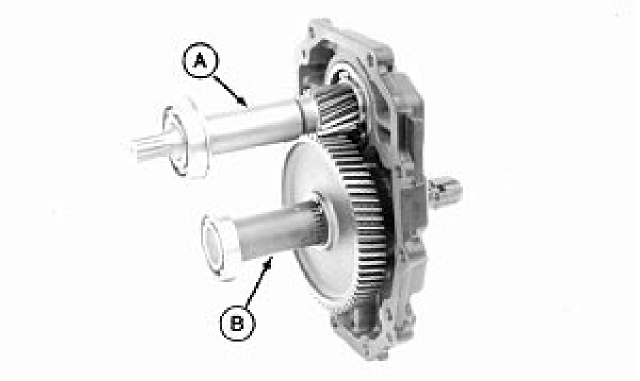
Disassemble, Inspect and Assemble Standard Rear PTO Drive Shaft Assembly

NOTE: Shaft assemblies are slip fit in cover.

1. Remove PTO output shaft assembly (B) from cover using a soft-faced hammer.

2. Remove PTO pinion shaft assembly (A).

A—PTO Pinion Shaft Assembly
B—PTO Output Shaft Assembly

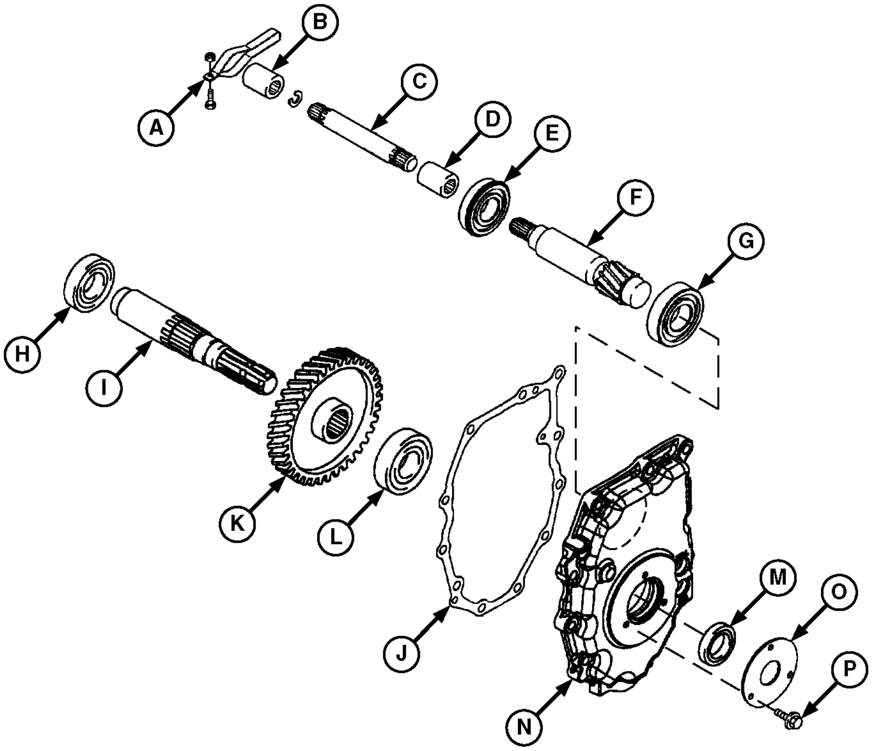


LV309 –UN–03MAR92

Single Speed PTO Shown

Continued on next page

OUO6046,0009C49 –19–15SEP04–1/3



LV10642 –UN–30SEP04

A—Snubber Brake
B—Coupler
C—Intermediate Shaft
D—Coupler
E—Bearing
F—Pinion Shaft
G—Bearing
H—Bearing
I—Output Shaft
J—Gasket
K—Drive Gear
L—Bearing
M—Seal
N—Cover
O—Plate
P—Cap Screw (3 used)

NOTE: Snubber brake (A) is mounted to differential housing. Coupler (B) is held in place by snubber brake. If replacement is necessary, remove rockshaft. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

IMPORTANT: Replace seal. Damaged or used seal will leak.

3. Remove cap screws (P) and plate (O) from cover.

4. Remove seal (M). Install seal into cover bore until it stops, using a bushing, bearing, and seal driver set.

5. Install plate (O) and cap screws (P).

NOTE: Bearing (L) is press fit on shaft.

6. Remove gear (K) and bearing (L) using a press.

7. Inspect parts (C—P) for wear or damage. Replace as necessary.

NOTE: Bearings (E, G, and H) are press fit. Remove bearings only if replacement is necessary.

8. Remove bearings (E, G, and H) using a knife-edged puller and a press.

9. Install new bearings (G and H) using a press.

NOTE: Install bearing (E) with flanged side toward pinion gear.

10. Install bearing (E) using a piece of pipe and a press.

11. Apply multipurpose grease to lips of seal.

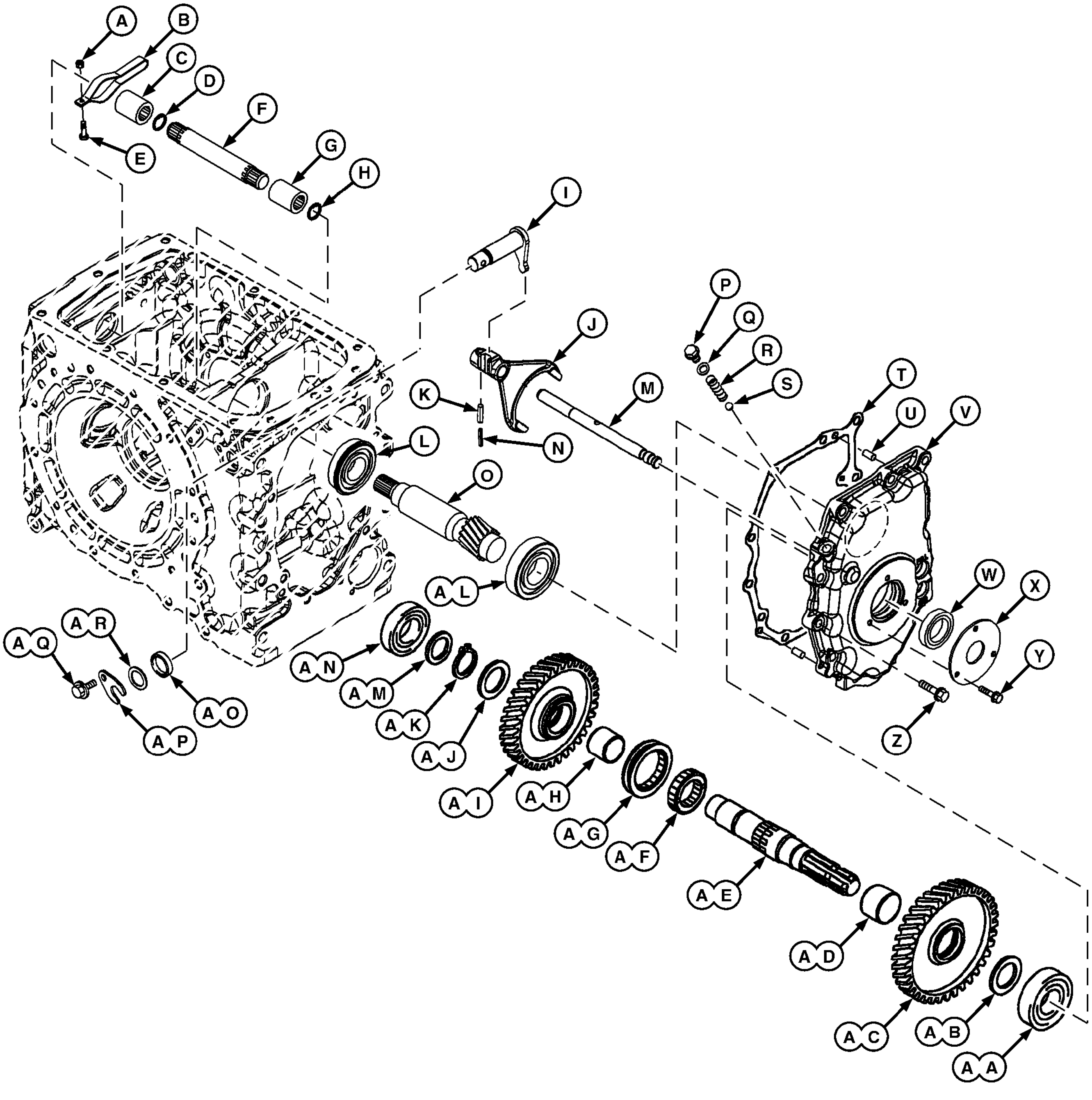
Continued on next page

12. Lubricate all parts with clean transmission/hydraulic oil.

13. Assemble all parts.

OUO6046,0009C49 –19–15SEP04–3/3

Disassemble, Inspect, and Assemble Rear 540/540E PTO Drive Shaft Assembly


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB
AC
AD
AE
AF
AG
AH
AI
AJ
AK
AL
AM
AN
AO
AP
AQ
AR

LV10643 –UN–28OCT04

Continued on next page OUO6046,0009C4B –19–15SEP04–1/2

A—Nut
B—Snubber Brake
C—Coupler
D—Ring
E—Cap Screw
F—Intermediate Shaft
G—Coupler
H—Ring
I—Arm
J—Fork
K—Pin
L—Ball Bearing
M—Shaft
N—Spring Pin
O—Shaft
P—Plug
Q—Washer
R—Spring
S—Ball
T—Gasket
U—Pin
V—Cover
W—Seal
X—Plate
Y—Cap Screw
Z—Cap Screw
AA—Ball Bearing
AB—Washer
AC—Gear
AD—Bushing
AE—Shaft
AF—Shift Collar
AG—Shifter
AH—Bushing
AI—Gear
AJ—Washer
AK—Ring
AL—Ball Bearing
AM—Washer
AN—Ball Bearing
AO—Seal
AP—Plate
AQ—Cap Screw
AR—Washer

NOTE: Shaft assemblies are slip fit in cover.

1. Remove plug (P), washer (Q), spring (R), and ball (S).

2. Remove shaft (M) with fork (J).

3. Remove PTO output shaft (AE) and assembly from cover using a soft-faced hammer.

4. Remove PTO pinion shaft (O) and assembly.

NOTE: Snubber brake (B) is mounted to differential housing. Coupler (G) is held in place by snubber brake. If replacement is necessary, remove rockshaft. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

IMPORTANT: Replace seal. Damaged or used seal will leak.

5. Remove cap screws (Y) and plate (X).

6. Remove seal (W) using a screwdriver. Install seal into cover bore until it stops, using a bushing, bearing, and seal driver set.

NOTE: Bearing (AA) is press fit on shaft.

7. Remove gear (AC) and bearing (AA) using a press.

8. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Bearings (L, AL, and AN) are press fit. Remove bearings only if replacement is necessary.

9. Remove bearings (L, AL, and AN) using a knife-edged puller and a press.

10. Install bearings (AN and AL) using a press.

NOTE: Install bearing (L) with flanged side toward pinion gear.

11. Install bearing (L) using a piece of pipe and a press.

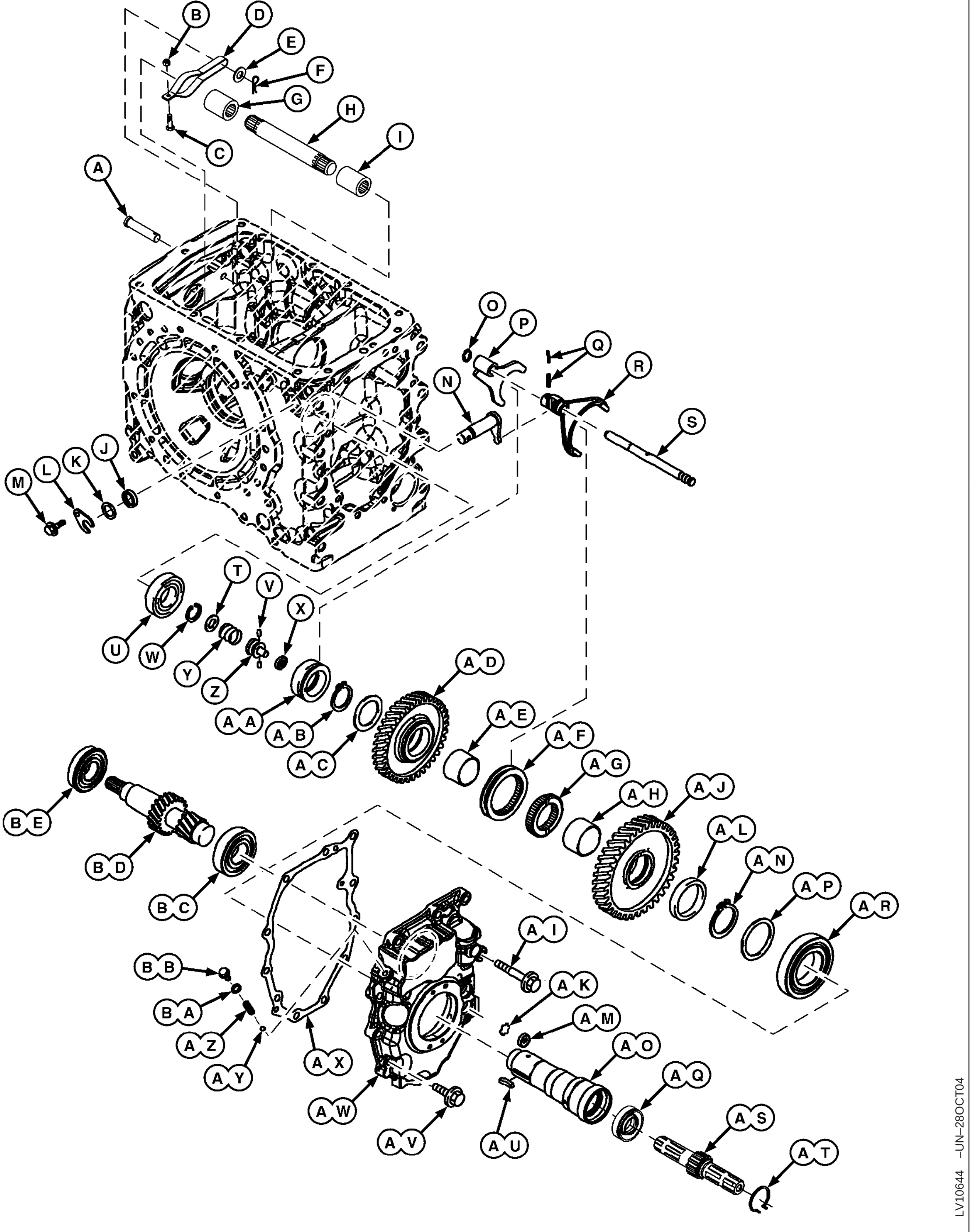
12. Apply multipurpose grease to lips of seal.

13. Lubricate all parts with clean transmission/hydraulic oil.

14. Assemble all parts.

OUO6046,0009C4B –19–15SEP04–2/2

Disassemble, Inspect, and Assemble Rear 540/1000 Standard PTO Drive Shaft Assembly


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB
AC
AD
AE
AF
AG
AH
AI
AJ
AK
AL
AM
AN
AO
AP
AQ
AR
AS
AT
AU
AV
AW
AX
AY
AZ
BA
BB
BC
BD
BE

LV10644 –UN–28OCT04

Continued on next page

A—Pin
B—Nut
C—Cap Screw
D—Snubber Brake
E—Washer
F—Pin
G—Coupler
H—Shaft
I—Coupler
J—Seal
K—Washer
L—Plate
M—Cap Screw
N—Arm
O—Ring
P—Fork
Q—Spring Pin (2 used)
R—Fork
S—Shaft
T—Washer
U—Bearing
V—Pin (2 used)
W—Snap Ring
X—Seal
Y—Spring
Z—Cam
AA—Shifter
AB—Snap Ring
AC—Washer
AD—Gear
AE—Bushing
AF—Shifter
AG—Shift Collar
AH—Bushing
AI—Cap Screw
AJ—Gear
AK—Frame (2 used)
AL—Shift Collar
AM—Window (2 used)
AN—Snap Ring
AO—Shaft
AP—Washer
AQ—Seal
AR—Bearing
AS—Shaft
AT—Snap Ring
AU—Key
AV—Cap Screw (10 used)
AW—Cover
AX—Gasket
AY—Ball
AZ—Spring
BA—Washer
BB—Cap Screw
BC—Bearing
BD—Shaft
BE—Bearing

1. Remove cap screw (BB), washer (BA), spring (AZ), and ball (AY).

2. Remove shaft (S) with forks (P and R).

3. Remove PTO output shaft (AO) and assembly from cover.

IMPORTANT: Replace seal. Damaged or used seal will leak.

4. Remove snap ring (AT) and shaft (AS).

5. Remove seal (AQ). Install new seal using a bushing, bearing, and seal driver set.

6. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Bearings (AR and U) are press fit. Remove only if replacement is necessary.

7. Remove bearings (AR and U) using a knife-edged puller and press.

8. Install bearings (AR and U) using a press.

9. Apply multipurpose grease to lips of seal (AQ).

10. Lubricate all parts with clean transmission/hydraulic oil.

11. Assemble all parts.

OUO6046,0009C4E –19–17SEP04–2/2

Remove and Install 540/540E Electro-Hydraulic Rear PTO Shaft Assembly

1. Drain transmission/differential.

2. Remove PTO shield.

3. Remove drawbar pin and drawbar.

4. Remove draft sensing support assembly. (See Inspect and Repair Draft Sensing Support Assembly in Section 70, Group 10.)

5. Remove banjo fittings (B and D).

6. Disconnect wire connectors (A and C).

7. Remove cap screws (E), rear PTO drive shaft assembly and gasket.

NOTE: PTO shaft (G) and coupler (F) may remove with PTO drive shaft assembly.

NOTE: Rockshaft is removed for illustration purposes only.

8. Make repairs as necessary. (See Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic and 540/1000 Electro-Hydraulic Pinion Shaft and Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic PTO Output Shaft Assembly or Disassemble, Inspect, and Assemble Rear 540/1000 Electro-Hydraulic PTO Output Shaft Assembly in Section 50, Group 20.)

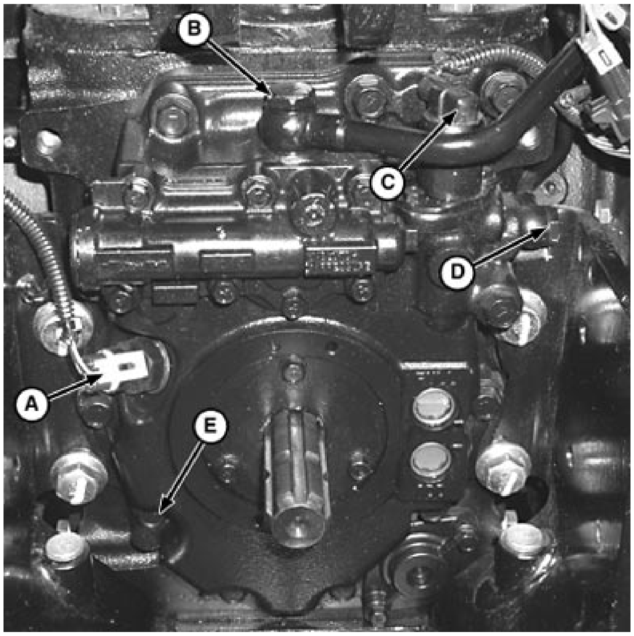
9. Apply Moly High Temperature EP Grease to splined end of shaft (G).

10. Install coupler (F) and shaft (G) if removed.

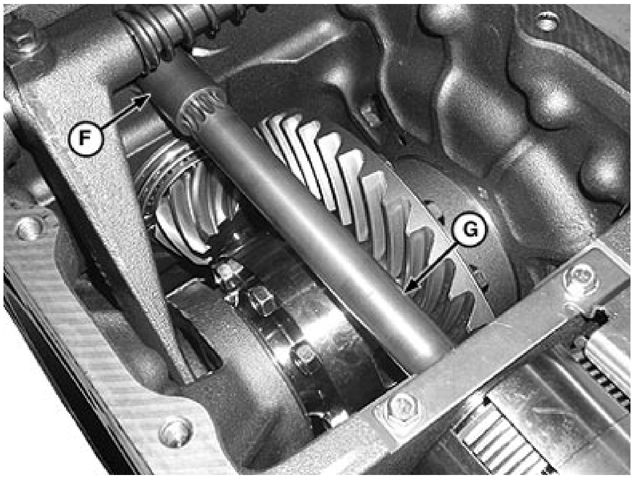
11. Install new gasket, rear PTO drive shaft assembly, and cap screws (E). Tighten cap screws to specification.

Specification

PTO Drive Shaft Assembly Cap Screw—Torque.. 65 N•m (48 lb-ft)



LV11429 –UN–28OCT04



LV11430 –UN–28OCT04

A—Wire Connector
B—Banjo Fitting
C—Wire Connector
D—Banjo Fitting
E—Cap Screw (10 used)
F—Coupler
G—Shaft

Continued on next page

JG31785,0000122 –19–27OCT04–1/2

12. Connect wire connectors (A and C).

13. Install banjo fitting (D). Tighten to specification.

Specification

PTO Inlet Port Banjo Fitting—
Torque .... 44 N•m (32 lb-ft)

14. Install banjo fitting (B). Tighten to specification.

Specification

Lube Inlet Port Banjo Fitting—
Torque .... 74 N•m (55 lb-ft)

15. Install draft sensing support assembly. (See Inspect and Repair Draft Sensing Support Assembly in Section 70, Group 10.)

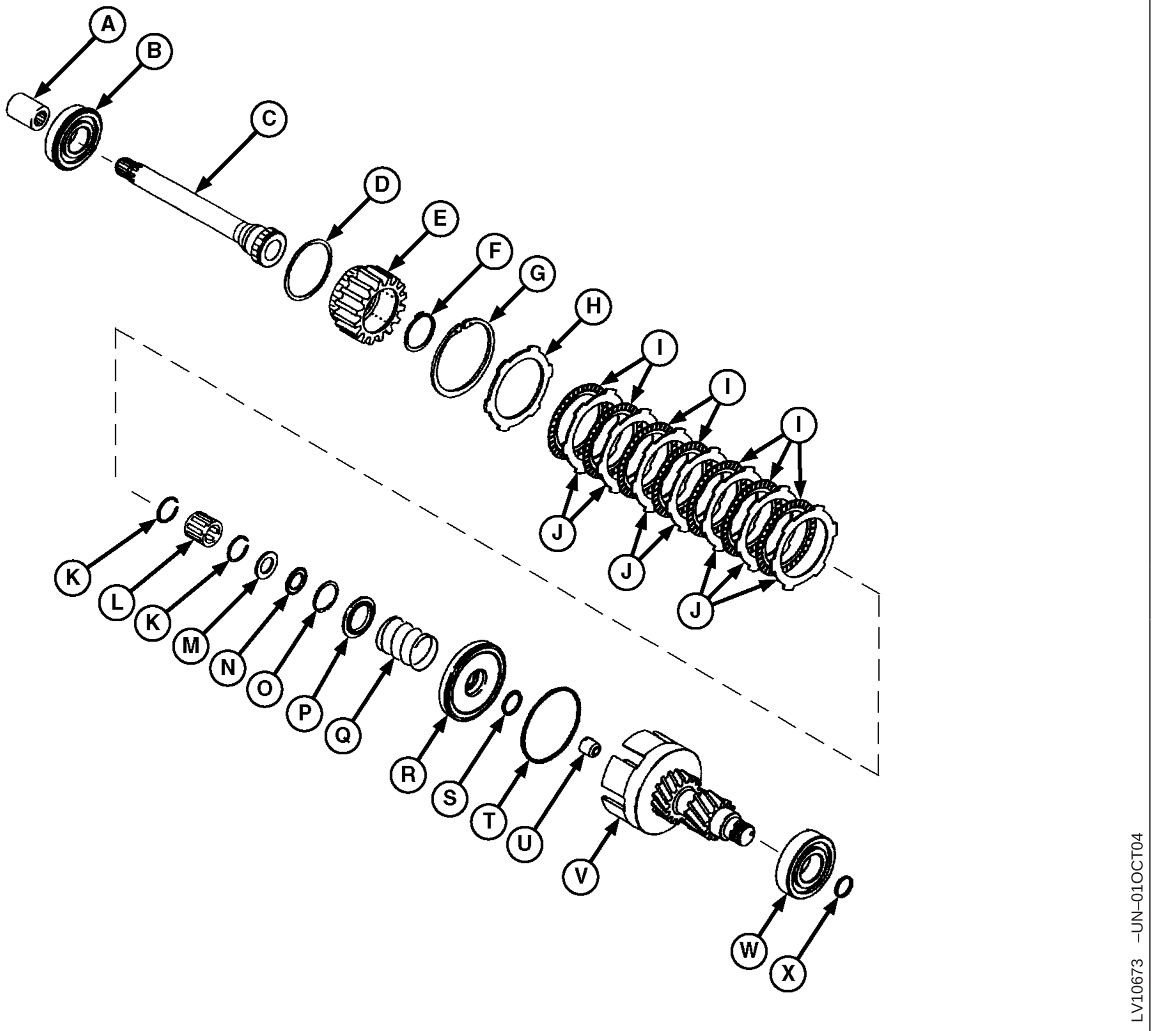
16. Install drawbar and pin.

17. Install PTO shield.

18. Fill transmission/differential with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000122 –19–27OCT04–2/2

Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic and 540/1000 Electro-Hydraulic Pinion Shaft



A—Coupler	**G—Snap Ring**	**M—Washer**	**S—O-Ring**
B—Bearing	**H—End Plate**	**N—Needle Bearing**	**T—O-Ring**
C—Shaft	**I—EH PTO Disk (7 used)**	**O—Snap Ring**	**U—Plug**
D—Ring	**J—Plate (7 used)**	**P—Holder**	**V—Shaft**
E—Gear	**K—Snap Ring (2 used)**	**Q—Spring**	**W—Bearing**
F—Snap Ring	**L—Thrust Bearing**	**R—Piston**	**X—O-Ring**

NOTE: Bearing (B) is press fit on shaft. Remove only if replacement is necessary.

1. Remove parts (A—N).

Continued on next page

OUO6046,0009C50 –19–17SEP04–1/2

2. Remove snap ring (O), holder (P), and spring (Q), using DFT1162 Snap Ring Removal Tool.

   Measure height of spring (Q). Replace if less than specification.

Specification

Piston Spring—Minimum Height .... 38.5 mm (1.51 in.)

NOTE: Bearing (W) is press fit on shaft. Remove only if replacement is necessary.

3. Remove parts (R—X).

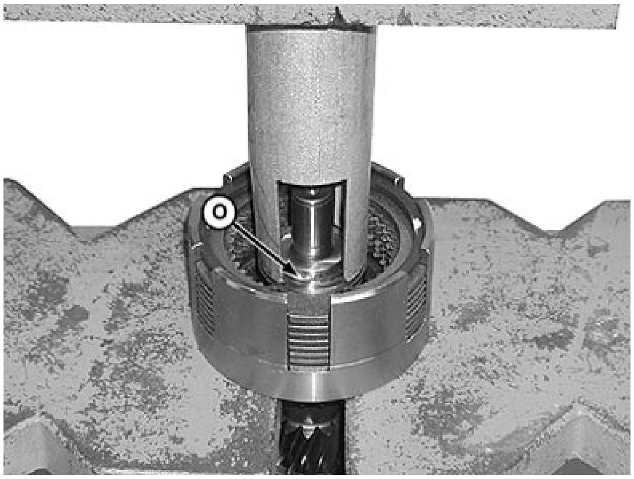
4. Inspect disks (I) and plates (H and J) for cracks or damage. Replace if necessary. Measure disk and plate thickness. Replace if less than specifications.

Specification

EH PTO Disk—Minimum Thickness.. 1.78 mm (0.070 in.)
EH PTO Clutch End Plate—Minimum Thickness.. 3.82 mm (0.150 in.)
EH PTO Clutch Plate—Minimum Thickness.. 2.15 mm (0.084 in.)

5. Lubricate all parts with clean transmission/hydraulic oil.

6. Assemble all parts.

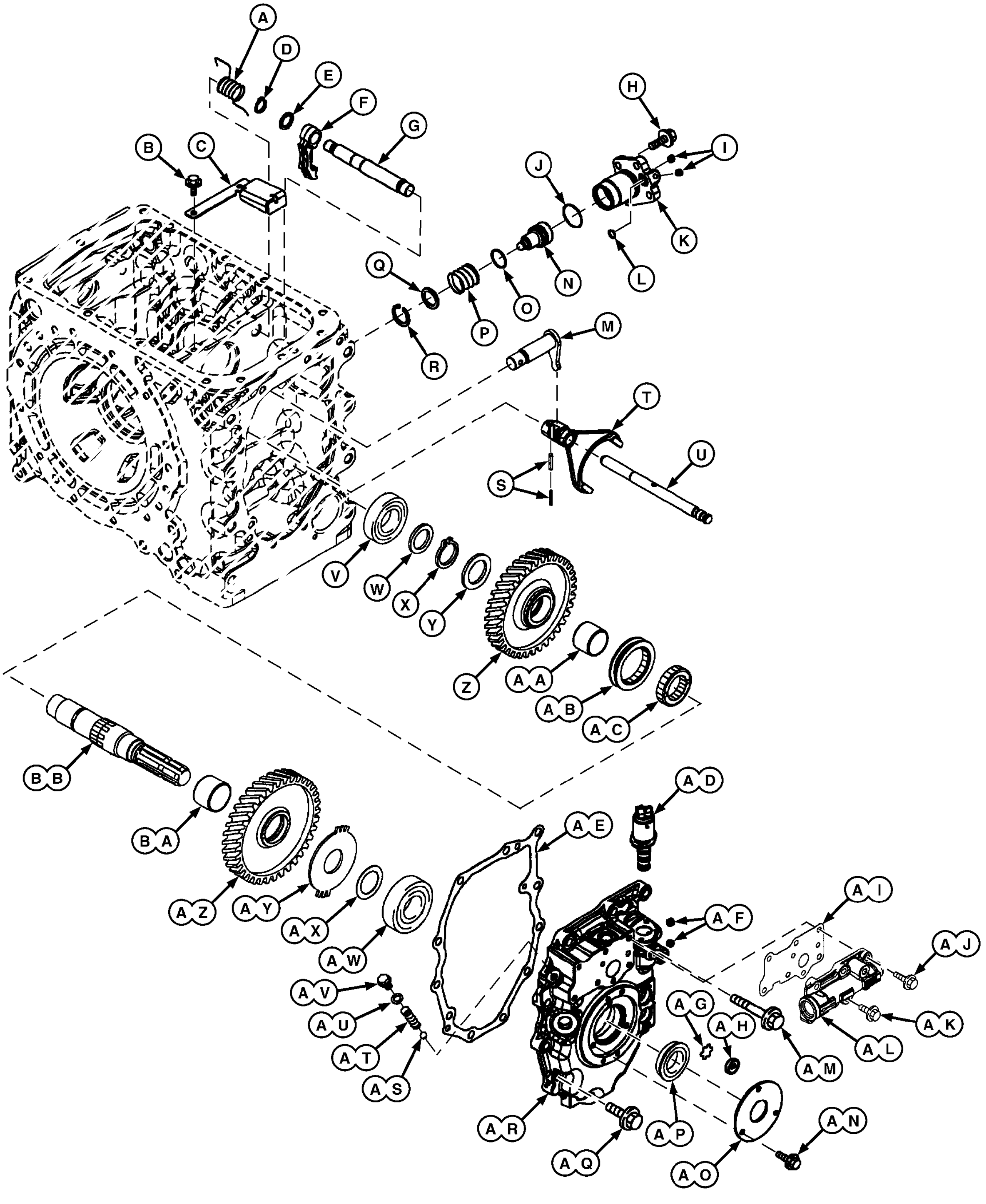


LV11424 –UN–28OCT04

O—Snap Ring

OUO6046,0009C50 –19–17SEP04–2/2

Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic PTO Output Shaft Assembly


A
D
E
F
G
B
C
H
I
J
K
L
N
O
Q
P
R
M
T
U
S
V
W
X
Y
Z
AA
AB
AC
BB
BA
AD
AE
AZ
AY
AX
AW
AI
AF
AJ
AV
AU
AT
AS
AG
AH
AK
AL
AM
AR
AP
AN
AQ
AO

LV10674 –UN–28OCT04

Continued on next page

A—Spring
B—Cap Screw (2 used)
C—Plate
D—Snap Ring
E—Washer
F—Brake
G—Shaft
H—Cap Screw (4 used)
I—Plug (2 used)
J—O-Ring
K—Holder
L—O-Ring
M—Arm
N—Piston
O—O-Ring
P—Spring
Q—Washer
R—Snap Ring
S—Spring Pin (2 used)
T—Fork
U—Shaft
V—Bearing
W—Washer
X—Retaining Ring
Y—Washer
Z—Gear
AA—Bushing
AB—Shifter
AC—Shift Collar
AD—Solenoid Valve
AE—Gasket
AF—Plug (2 used)
AG—Frame
AH—Window
AI—Gasket
AJ—Cap Screw (6 used)
AK—Cap Screw
AL—Valve
AM—Cap Screw
AN—Cap Screw (3 used)
AO—Plate
AP—Seal
AQ—Cap Screw (10 used)
AR—Cover
AS—Ball
AT—Spring
AU—Washer
AV—Plug
AW—Bearing
AX—Washer
AY—Disk
AZ—Gear
BA—Bushing
BB—Shaft

NOTE: Shaft assemblies are slip fit in cover.

1. Remove plug (AV), washer (AU), spring (AT), and ball (AS).
2. Remove shaft (U) with fork (T).
3. Remove PTO output shaft (BB) and assembly from cover.

IMPORTANT: Replace seal. Damaged or used seal will leak.

4. Remove cap screws (AN) and plate (AO).
5. Remove seal (AP). Install new seal into cover bore using a bushing, bearing, and seal driver set.

NOTE: Bearing (AW) is press fit on shaft.

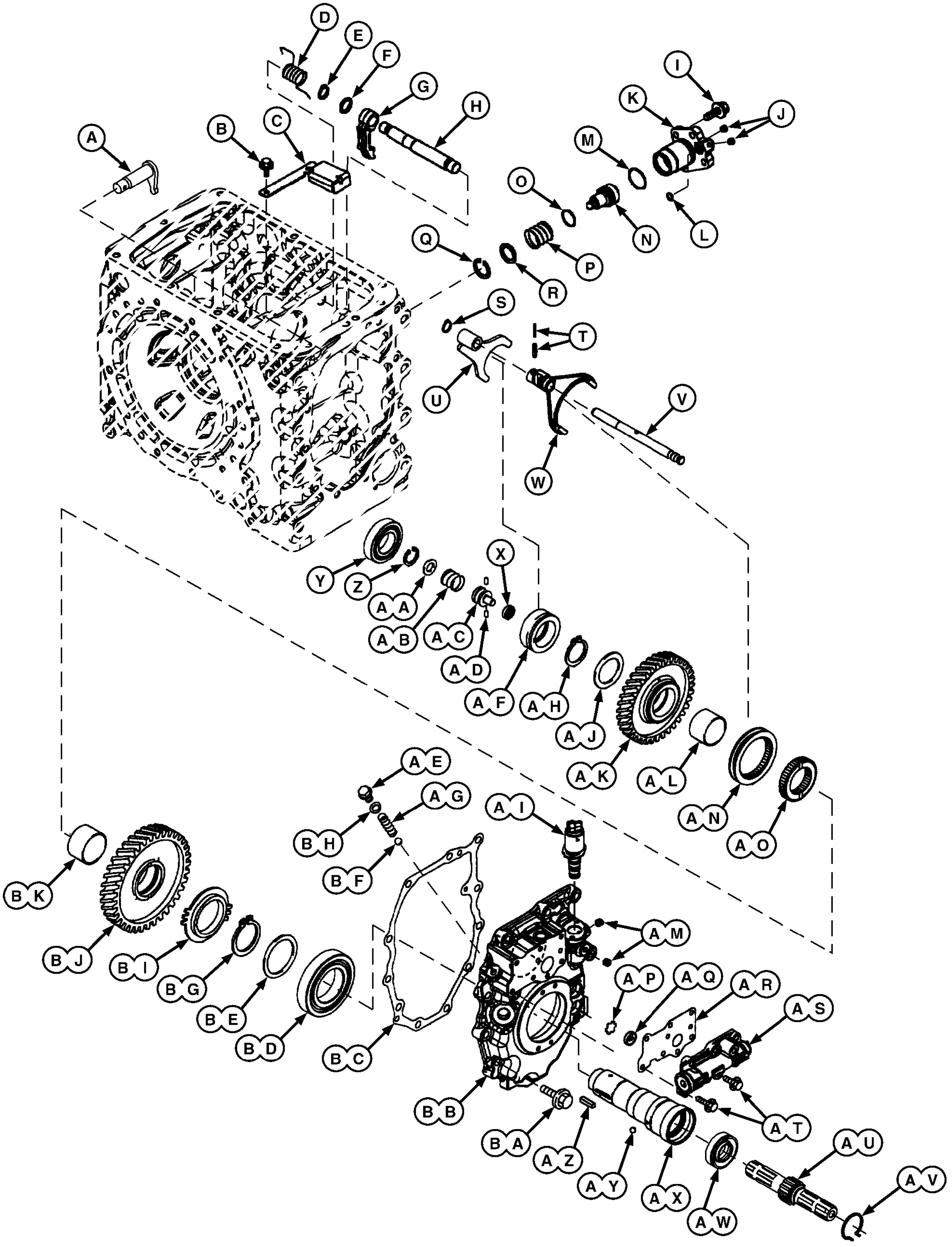
6. Remove bearing (AW) and gear (AZ) using a press.
7. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Bearing (V) is press fit. Remove only if replacement is necessary.

8. Remove bearing (V) using a knife-edged puller and press.
9. Install bearing (V) using a press.
10. Apply multipurpose grease to lips of seal (AP).
11. Lubricate all parts with clean transmission/hydraulic oil.
12. Assemble all parts.

OUO6046,0009C4C –19–17SEP04–2/2

Disassemble, Inspect, and Assemble Rear 540/1000 Electro-Hydraulic PTO Output Shaft Assembly


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
AA
AB
AC
AD
AE
AF
AG
AH
AI
AJ
AK
AL
AM
AN
AO
AP
AQ
AR
AS
AT
AU
AV
AW
AX
AY
AZ
BA
BB
BC
BD
BE
BF
BG
BH
BI
BJ
BK

LV10645 –UN–28OCT04

Continued on next page

OUO6046,0009C4F –19–17SEP04–1/2

Rear PTO Drive Shaft

A—Pin
B—Cap Screw (2 used)
C—Plate
D—Spring
E—Snap Ring
F—Washer
G—Snubber Brake
H—Shaft
I—Cap Screw (4 used)
J—Plug (2 used)
K—Holder
L—O-Ring
M—O-Ring
N—Piston
O—O-Ring
P—Spring
Q—Snap Ring
R—Washer
S—Ring
T—Spring Pin (2 used)
U—Fork
V—Shaft
W—Fork
X—Seal
Y—Bearing
Z—Snap Ring
AA—Washer
AB—Spring
AC—Cam
AD—Pin (2 used)
AE—Cap Screw
AF—Shifter
AG—Spring
AH—Snap Ring
AI—Solenoid Valve
AJ—Washer
AK—Gear
AL—Bushing
AM—Plug (2 used)
AN—Shifter
AO—Shift Collar
AP—Frame (2 used)
AQ—Window (2 used)
AR—Gasket
AS—Valve
AT—Cap Screws (6 used)
AU—Shaft
AV—Snap Ring
AW—Seal
AX—Shaft
AY—Ball
AZ—Key
BA—Cap Screw (10 used)
BB—Cover
BC—Gasket
BD—Bearing
BE—Washer
BF—Ball
BG—Snap Ring
BH—Washer
BI—Disk
BJ—Gear
BK—Bushing

1. Remove cap screw (AE), washer (BH), spring (AG), and ball (BF).

2. Remove shaft (V) with forks (U and W).

3. Remove PTO output shaft (AX) and assembly from cover.

IMPORTANT: Replace seal. Damaged or used seal will leak.

4. Remove seal (AW). Install new seal using a bushing, bearing, and seal driver set.

5. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Bearing (BD) is press fit on shaft. Remove only if replacement is necessary.

6. Remove bearing (BD) using a knife-edged puller and a press.

7. Install bearing (BD) using a press.

NOTE: Bearing (Y) is press fit. Remove only if replacement is necessary.

8. Remove bearing (Y) using a knife-edged puller and press.

9. Install bearing (Y) using a press.

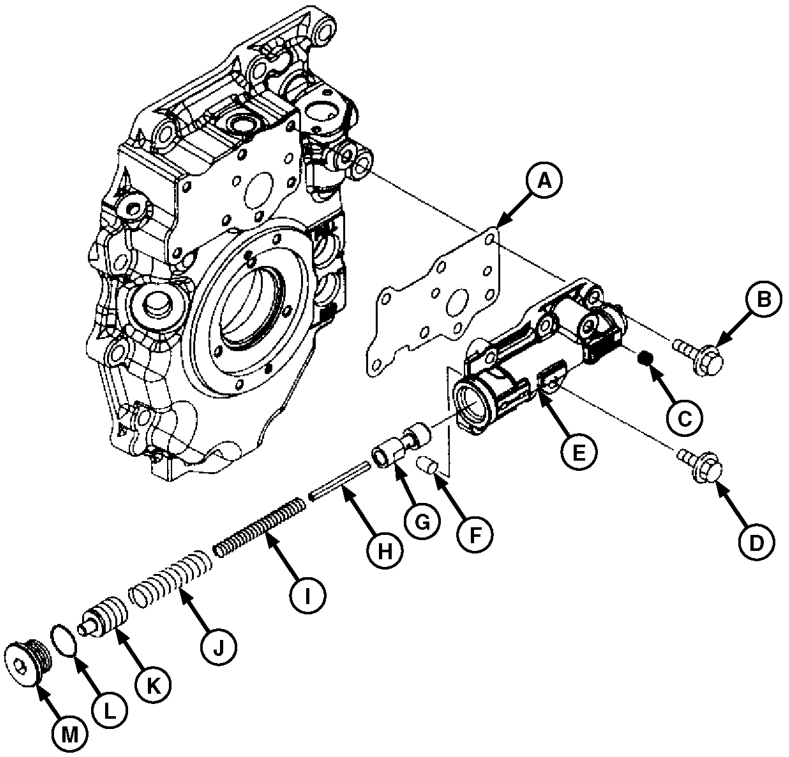
10. Apply multipurpose grease to lips of seal (AW).

11. Lubricate all parts with clean transmission/hydraulic oil.

12. Assemble all parts.

OUO6046,0009C4F –19–17SEP04–2/2

Remove, Inspect and Install Electro-Hydraulic PTO Valve



A—Gasket
B—Cap Screw (6 used)
C—Plug
D—Cap Screw (short)
E—Valve Body
F—Orifice
G—Valve
H—Pin
I—Inner Spring
J—Outer Spring
K—Piston
L—Packing
M—Plug

1. Remove cap screws (B and D), valve (E) and gasket (A).
2. Disassemble parts (F—M). Inspect all parts for wear or damage. Replace as necessary.

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

3. Lubricate all parts with clean transmission/hydraulic oil.
4. Assemble all parts.
5. Install new gasket (A), valve (E) and cap screws (B and D). Tighten cap screws to specification.

Specification

EH PTO Valve Cap Screws—
Torque... 25 N•m (18 lb-ft)

JG31785,000014D –19–04NOV04–1/1

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

JG31785,000009B –19–20SEP04–1/4

Pinion Shaft Holding Fixture JDG1164

Holds differential drive shaft when removing or torquing nut.

JG31785,000009B –19–20SEP04–2/4

Special Socket JDG735

Removes and torques differential drive shaft nut.

JG31785,000009B –19–20SEP04–3/4

Spring Scale JDT42

Measures differential drive shaft rolling drag force.

JG31785,000009B –19–20SEP04–4/4

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

JG31785,000009C –19–21SEP04–1/2

Bushing, Bearing, and Seal Driver Set

Used to install differential drive shaft bearing cup.

JG31785,000009C –19–21SEP04–2/2

Other Material

Number	Name	Use
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to differential assembly cap screw threads and differential lock assembly locking pin threads.

LOCTITE is a trademark of Loctite Corp.

JG31785,000009D –19–21SEP04–1/1

Specifications

Item	Measurement	Specification
Differential Cap Screw	Torque	58 N•m (43 lb-ft)
Case-to-Housing Cap Screw	Torque	95 N•m (70 lb-ft)
Ring Gear Cap Screw	Torque	78 N•m (58 lb-ft)
Differential Drive Shaft Spacer and Shims	Thickness	0.25—0.75 mm (0.010—0.030 in.) nominal
Differential Drive Shaft Nut	Torque	245—294 N•m (181—217 lb-ft)
Differential Drive Shaft Rolling Drag Starting	Force	0.22—0.26 N (0.791—0.935 oz-force)
Differential Drive Shaft Quill Cap Screw	Torque	52 N•m (38 lb-ft)
Differential Cone Point	Distance	17.5 ± 0.05 mm (0.688 ± 0.002 in.)
Differential Backlash	Distance	0.15—0.20 mm (0.006—0.008 in.)
Differential Quill	Angle	30°
Differential Cap Screw	Torque	58 N•m (43 lb-ft)

JG31785,00000C5 –19–27SEP04–1/1

Service Parts Kits

The following kits are available through your parts catalog:

Shim Kit—Differential Drive Shaft Bearing Preload

Shim Kit—Differential Drive Shaft Cone Point

Shim Kit—Differential Backlash

JG31785,000009F –19–21SEP04–1/1

Remove and Install Differential Assembly

1. Remove differential lock assembly. (See Remove, Inspect, and Install Differential Lock Assembly in Section 50, Group 25.)

2. Remove brake assemblies. (See Remove and Inspect Brakes in Section 60, Group 10.)

3. Remove rear PTO drive shaft assembly. (See Remove and Install Standard and 540/540E Rear PTO Drive Shaft Assembly in Section 50, Group 20.)

NOTE: Remove cab if equipped. (See Remove Cab in Section 90, Group 15.)

4. Remove six cap screws (B) and shims (C). Turn differential quill (A) 30° and install cap screws in the two threaded holes. Use cap screws to draw out the quill.

5. Remove differential assembly.

6. Make repairs as necessary. (See Disassemble, Inspect, and Assemble Differential Assembly in Section 50, Group 25.)

7. Install differential assembly.

8. Install differential quill, cap screws, and shims. Tighten cap screws to specification.

Specification

Differential Cap Screw—Torque..................................... 58 N•m (43 lb-ft)

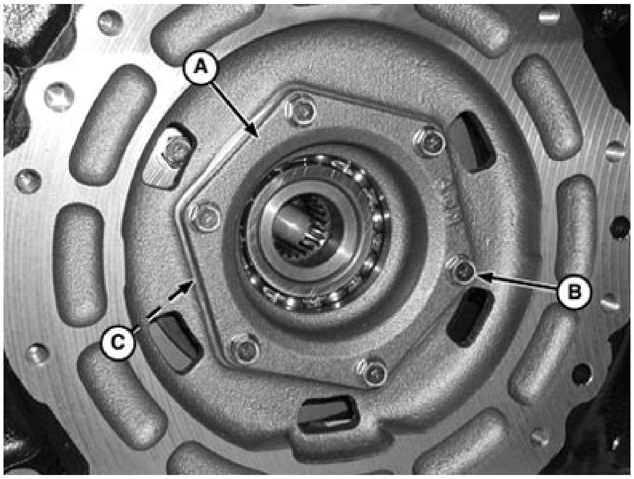
NOTE: Adjustment of backlash is not necessary unless the ring gear or differential drive shaft were replaced or cone point adjustment was made.

9. Adjust differential backlash, if necessary. (See Differential Backlash Adjustment in Section 50, Group 25.)

10. Install brake assemblies.

11. Install rear PTO drive gear shaft assembly.

12. Install differential lock assembly.



LV10726 –UN–24SEP04

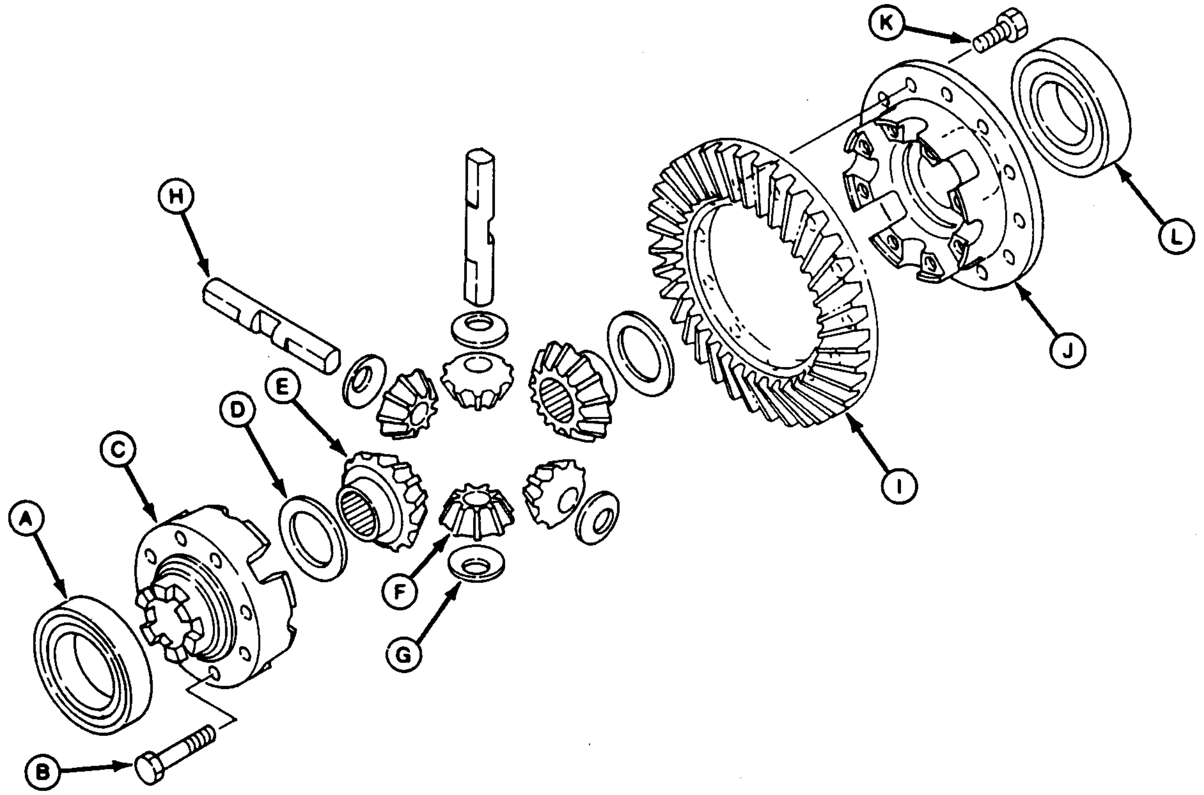
A—Differential Quill
B—Cap Screw (6 used)
C—Shims

Continued on next page

13. Install cab if equipped. (See Install Cab in Section 90, Group 15.)

JG31785,00000A0 –19–21SEP04–2/2

Disassemble, Inspect, and Assemble Differential Assembly



LV313A —UN—03MAR92

A—Bearing	D—Thrust Washer (2 used)	G—Thrust Washer (4 used)	J—Housing
B—Cap Screw (8 used)	E—Bevel Gear (2 used)	H—Pinion Shaft (2 used)	K—Cap Screw (12 used)
C—Case with Locking Pawl	F—Bevel Pinion (4 used)	I—Ring Gear	L—Bearing

1. Disassemble parts (B—K).

NOTE: Bearings (A and L) are press fit. Remove bearings only if replacement is necessary.

2. Remove bearings (A and L) using a knife-edged puller and a press.

3. Inspect parts for wear or damage. Replace if necessary.

4. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (B and K). Tighten cap screws to specification.

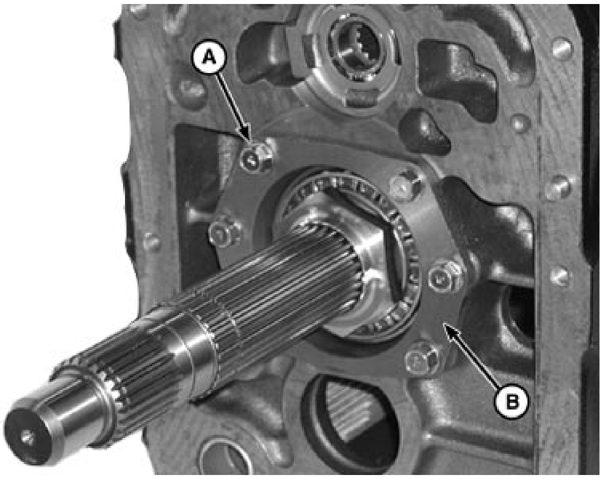
Specification	
Case-to-Housing Cap Screw—Torque	95 N•m (70 lb-ft)
Ring Gear Cap Screw—Torque	78 N•m (58 lb-ft)

5. Apply clean transmission/hydraulic oil to all parts during assembly.

6. Assemble all parts.

JG31785,00000A1 –19–21SEP04–1/1

Remove and Inspect Differential Drive Shaft



LV10727 –UN–24SEP04

A—Cap Screw (6 used)
B—Quill Flange

1. Remove MFWD and range gears. (See Remove, Inspect, and Install MFWD and Range Gears in Section 50, Group 15 for SYNCSHUTTLE™ Transmissions, or Remove, Inspect, and Install MFWD and Range Gears in Section 50, Group 16 for POWRREVERSER Transmissions.)

2. Remove six cap screws (A).

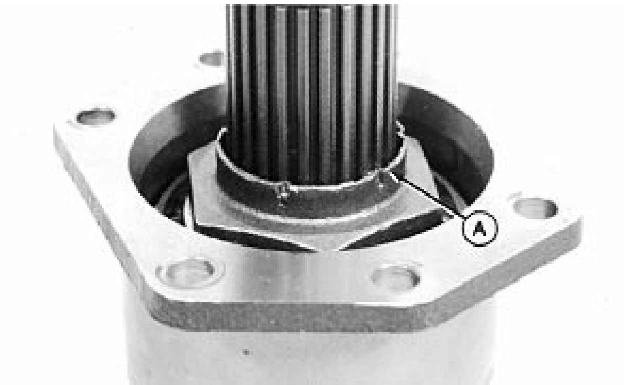
IMPORTANT: When prying around quill flange, take care not to damage shim packs.

3. Pry around quill flange (B) using a screwdriver. Remove differential drive shaft quill and shims.

JG31785,00000A2 –19–21SEP04–1/4

4. Straighten locking tabs (A) on collar of nut using a small punch.

A—Locking Tab



LV484 –UN–03MAR92

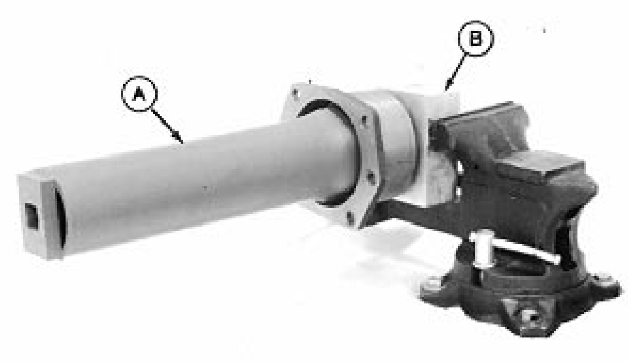
JG31785,00000A2 –19–21SEP04–2/4

5. Place JDG1164 Pinion Shaft Holding Fixture (B) onto end of shaft.

6. Place assembly in a vise as shown.

7. Use JDG735 Special Socket (A) to remove nut.

A—JDG735 Special Socket
B—JDG1164 Pinion Shaft Holding Fixture



LV483 –UN–03MAR92

Continued on next page

JG31785,00000A2 –19–21SEP04–3/4

NOTE: Bearing cones (B) and (H) are press fit on shaft.

8. Remove shaft (I) from quill (D) using a knife-edged puller and a press.

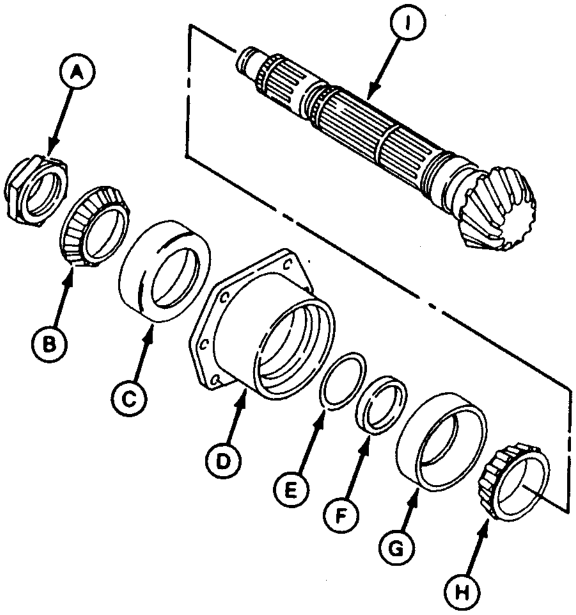
9. Remove parts (B, E, F, and H).

10. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Bearing cups (C and G) are press fit in quill (D). Remove cups only if replacement is necessary.

11. Remove bearing cups using a small punch and hammer.

IMPORTANT: Differential drive shaft and differential ring gear are a matched set. If shaft was replaced, ring gear must be replaced also.



LV485A –UN–03MAR92

A—Nut
B—Bearing Cone
C—Bearing Cup
D—Quill
E—Shim (number as required)
F—Spacer
G—Bearing Cup
H—Bearing Cone
I—Differential Drive Shaft

JG31785,00000A2 –19–21SEP04–4/4

Install Differential Drive Shaft

NOTE: Lubricate all parts with clean transmission/hydraulic oil during assembly.

1. Install bearing cups (C and G), if removed, into quill (D), using a bearing, bushing, and seal driver set and a press.

2. Install bearing cone (H) onto shaft (I).

NOTE: Shims are available in three thicknesses: 0.10, 0.15, and 0.20 mm (0.004, 0.006, and 0.008 in.).

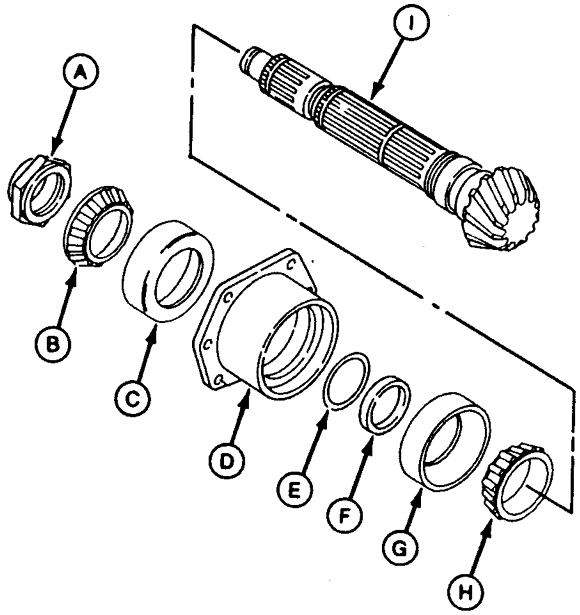
3. Install shaft (I) into quill (D). Turn quill and shaft assembly around. Install spacer (F) and shims (E) with nominal thickness specification.

Specification	
Differential Drive Shaft Spacer and Shims—Thickness	0.25—0.75 mm (0.010—0.030 in.) nominal

4. Install bearing cone (B) using a piece of pipe and a press.

IMPORTANT: Always use a new nut when assembling shaft.

5. Install new nut (A) and tighten by hand.



LV485A –UN–03MAR92

A—Nut
B—Bearing Cone
C—Bearing Cup
D—Quill
E—Shim (number as required)
F—Spacer
G—Bearing Cup
H—Bearing Cone
I—Differential Drive Shaft

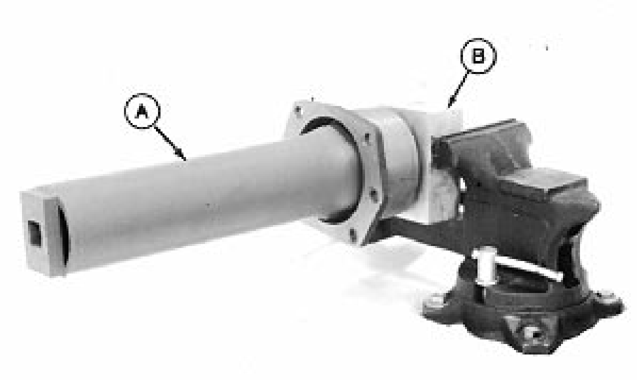
Continued on next page

JG31785,00000A3 –19–21SEP04–1/5

6. Place JDG1164 Pinion Shaft Holding Fixture (B) onto end of shaft.

7. Place assembly in a vise as shown.

8. Use JDG735 Special Socket (A) to tighten nut to specification.



LV483 –UN–03MAR92

Specification

Differential Drive Shaft Nut—
Torque .... 245—294 N•m (181—217 lb-ft)

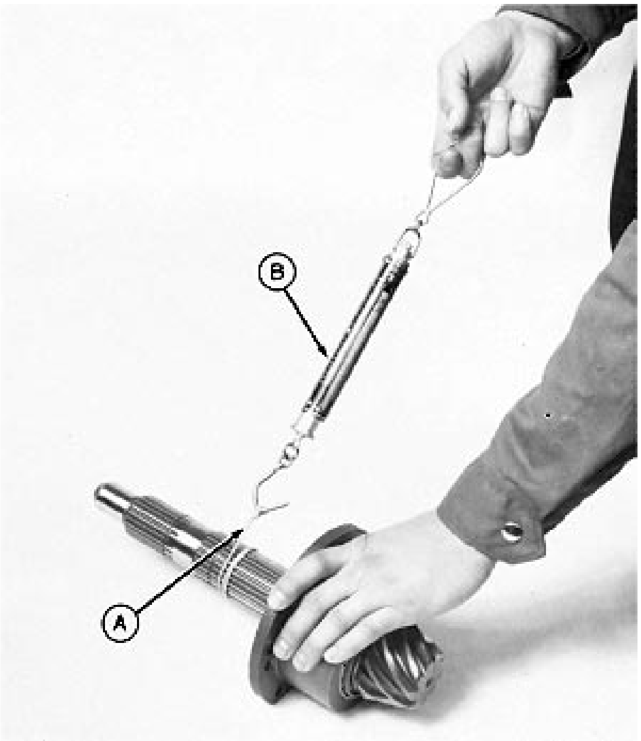
A—JDG735 Special Socket
B—JDG1164 Pinion Shaft Holding Fixture

JG31785,00000A3 –19–21SEP04–2/5

9. Wrap a string (A) (approximately 1 m (3 ft) long) around differential drive shaft.

10. Attach a JDT42 Spring Scale (B) or its equivalent to the end of the string.

11. Raise the spring scale, noting the force required to start turning the differential drive shaft while holding the quill stationary. Repeat several times for an accurate reading. Force should be within specifications. If force is high, add shims. If force is low, remove shims. Check and readjust until force is in the same specified range.



RW2050 –UN–06MAR90

Specification

Differential Drive Shaft Rolling
Drag Starting—Force.................................... 0.22—0.26 N (0.791—0.935 oz-force)

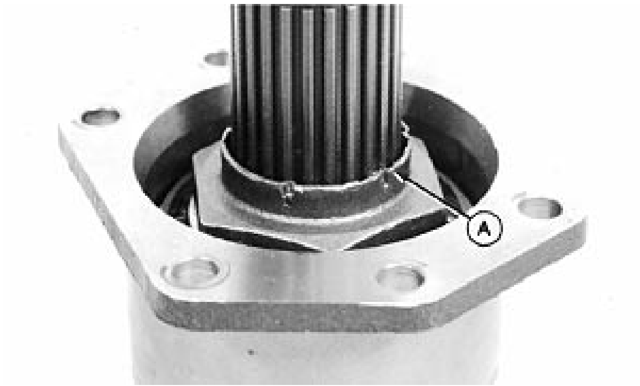
A—String
B—JDT42 Spring Scale

Continued on next page

JG31785,00000A3 –19–21SEP04–3/5

12. Deform collar of nut (A) into splines of shaft at three places around nut, using a small punch.

A—Collar of Nut



JG31785,00000A3 –19–21SEP04–4/5

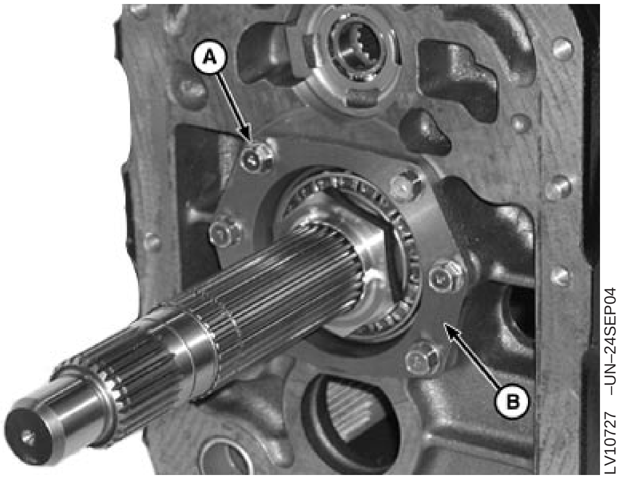
IMPORTANT: Adjust differential cone points only if ring gear and shaft were replaced. If gear and shaft were not replaced, use same shim pack or same thickness of original shims removed.

13. Install differential drive shaft quill flange (B) using a rubber mallet.

14. Install six cap screws (A) and original shim pack. Tighten cap screws to specification.

Specification

Differential Drive Shaft Quill Cap Screw—Torque.. 52 N•m (38 lb-ft)



A—Cap Screw (6 used)
B—Quill Flange

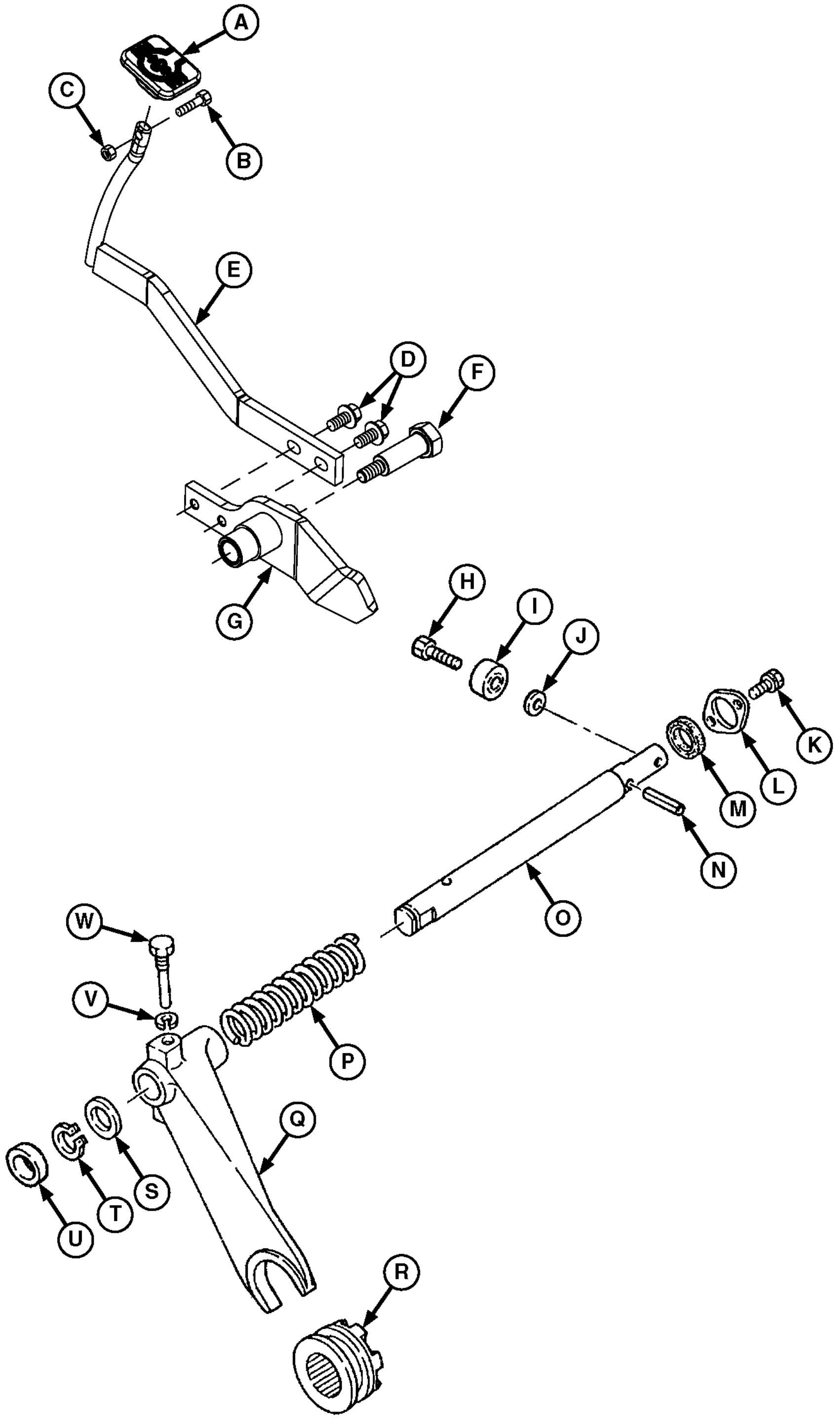
15. Install MFWD and range gears. (See Remove, Inspect, and Install MFWD and Range Gears in Section 50, Group 15 for SYNCSHUTTLE transmissions or Remove, Inspect, and Install MFWD and Range Gears in Section 50, Group 16 for POWRREVERSER Transmissions.)

NOTE: To adjust cone point, rockshaft case must be removed. (See Remove and Install Rockshaft Case—Straddle Mount, Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch or Remove and Install Rockshaft Case—All Tractors with Electro-Hydraulic Hitch in Section 70, Group 10.)

16. Adjust cone point, if necessary. (See Differential Cone Point Adjustment in Section 50, Group 25.)

JG31785,00000A3 –19–21SEP04–5/5

Remove, Inspect, and Install Differential Lock Assembly


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W

LV7250 –UN–15JUN01

Continued on next page

A—Differential Lock Pedal
B—Cap Screw
C—Nut
D—Cap Screw (2 used)
E—Lever Extension (cab shown)
F—Shoulder Bolt
G—Lever
H—Cap Screw
I—Roller
J—Washer
K—Cap Screw (2 used)
L—End Plate
M—Seal
N—Spring Pin
O—Differential Lock Shaft
P—Spring
Q—Fork
R—Lock Collar
S—Washer
T—Snap Ring
U—End Cap
V—Lock Washer
W—Threaded Locking Pin

1. Remove rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount, Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch or Remove and Install Rockshaft Case—All Tractors with Electro-Hydraulic Hitch in Section 70, Group 10.)

2. Remove parts (A—J).

3. Pry between differential housing and fork (Q) to remove pin (W) and washer (V).

4. Remove parts (K—U).

NOTE: To service lock collar (R), remove left brake assembly. (See Remove and Inspect Brakes in Section 60, Group 10.)

5. Inspect all parts for wear or damage. Replace as necessary.

IMPORTANT: Replace seal (M). Damaged or used seals will leak.

Replace threaded locking pin (W). Always use a new pin when assembling shaft and fork.

6. Apply multipurpose grease to inside lips of seal (M) and to shoulder bolt (F).

7. Apply Thread Lock and Sealer (Medium Strength) to threads of locking pin (W).

8. Install all parts.

9. Install rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount, Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch or Remove and Install Rockshaft Case—All Tractors with Electro-Hydraulic Hitch in Section 70, Group 10.)

JG31785,00000A4 –19–21SEP04–2/2

Differential Cone Point Adjustment

NOTE: Gears are removed from differential drive shaft for illustration only.

1. Remove rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount, Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch or Remove and Install Rockshaft Case—All Tractors with Electro-Hydraulic Hitch in Section 70, Group 10.)

2. Measure cone point with a spacer of known dimension and feeler gauges. Measure spacer (drill bits work well) and add feeler gauges to equal specification. Insert spacer and feeler gauge to determine cone point dimension (A). Add shims to increase cone point; remove shims to decrease.

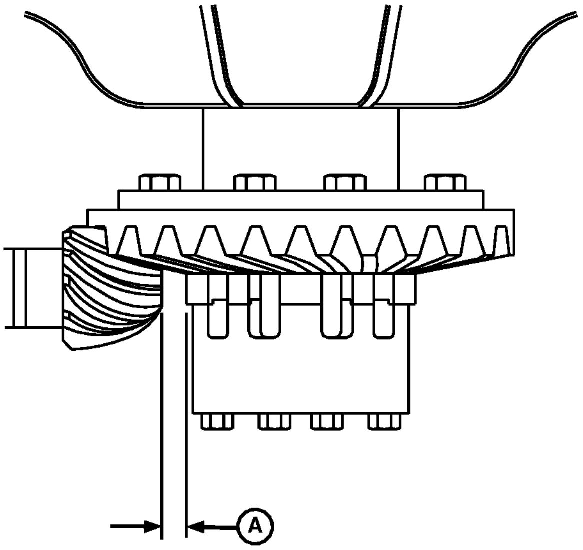
NOTE: Shims are available in three thicknesses: 0.1, 0.3 and 0.5 mm (0.004, 0.012 and 0.020 in.).

3. After adding or removing shims, tighten cap screws to specification and recheck cone point.

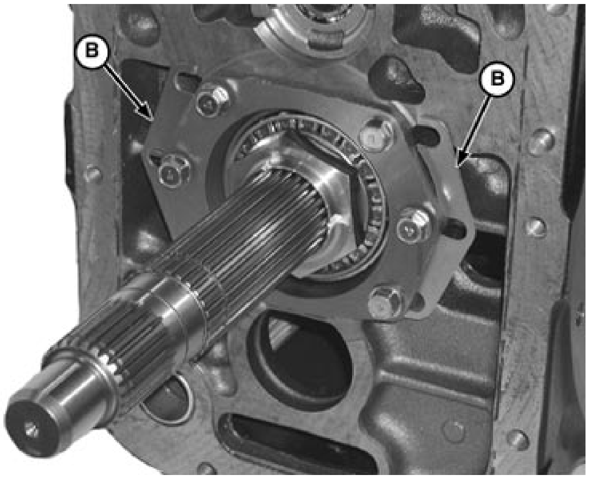
Specification

Differential Drive Shaft Quill Cap Screw—Torque	52 N•m (38 lb-ft)
Differential Cone Point—Distance	17.5 ± 0.05 mm (0.688 ± 0.002 in.)

4. Check differential backlash. (See Differential Backlash Adjustment in Section 50, Group 25.)



LV1617 –UN–12FEB96



LV10728 –UN–11OCT04

A—Cone Point Dimension
B—Shims

JG31785,00000A5 –19–21SEP04–1/1

Differential Backlash Adjustment

IMPORTANT: Always check and adjust backlash after cone point adjustment has been made.

1. While slowly rotating differential carrier, lightly tap carrier with a soft-faced mallet to make sure bearing on other side of ring gear is seated.

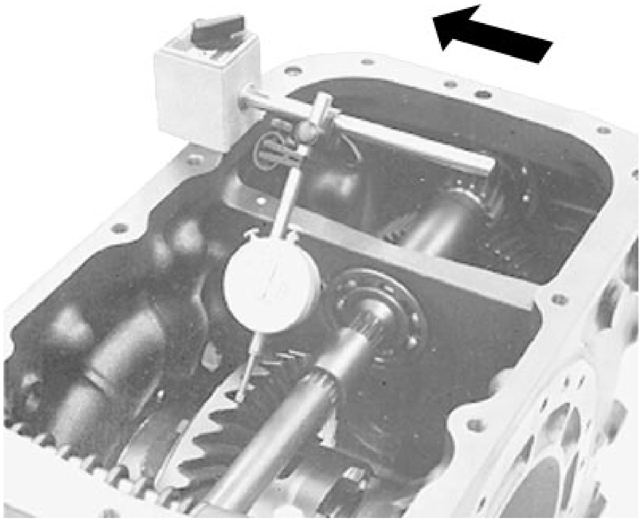
2. Attach a dial indicator to housing, as shown, with contact point positioned on ring gear splines.

NOTE: Ring gear carrier is not preloaded and will have normal side-to-side movement.

3. While holding input shaft, move carrier and ring gear to determine differential backlash. Backlash should be within specification.

Specification

Differential Backlash—Distance .... 0.15—0.20 mm (0.006—0.008 in.)



50
25
15

4. To adjust backlash, remove six cap screws (B). Turn differential quill (A) to specified angle and install cap screws in the two threaded holes. Use cap screws to draw out the quill.

Specification

Differential Quill—Angle .... 30°

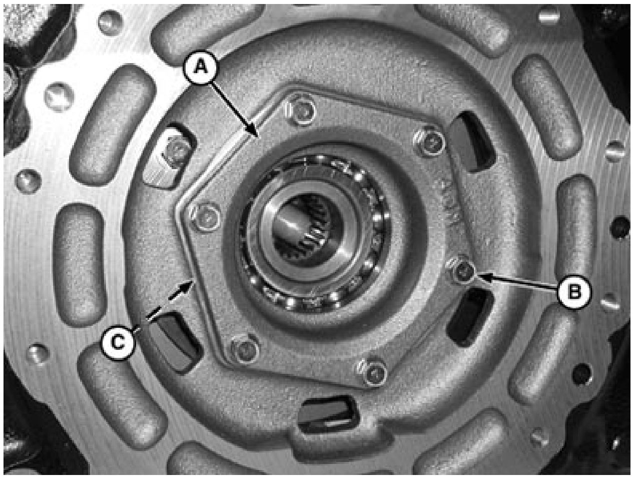
5. Remove shims (C) to decrease backlash and add shims to increase.

6. Recheck backlash after removing or adding shims.

7. Tighten differential cap screws to specification.

Specification

Differential Cap Screw—Torque..................................... 58 N•m (43 lb-ft)



A—Differential Quill
B—Cap Screw (6 used)
C—Shims

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO6046,000C354 –19–25AUG04–1/3

Final Drive Turning Tool DFLV1A

Turns final drive housing to set rolling torque.

OUO6046,000C354 –19–25AUG04–2/3

Bushing, Bearing, and Seal Driver Set

Used to install planetary gears, replace bushings in MFWD lever and linkage, and replace seal in MFWD drop gearbox.

OUO6046,000C354 –19–25AUG04–3/3

Other Material

Number	**Name**	**Use**
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cleans parts and speeds cure of sealant used between mating surfaces of final drive and differential casings.
PM38657 (U.S.) PM38628 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Apply between mating surfaces of final drive and differential casings.
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to shaft of shoulder bolts on MFWD lever and linkage.

LOCTITE is a trademark of Loctite Corp.

OUO6046,000C355 –19–25AUG04–1/1

Specifications

Item	Measurement	Specification
Final Drive Assembly Cap Screw	Torque	128 N•m (94 lb-ft)
Final Drive Housing	Rolling Drag Torque	9 N•m (80 lb-in.) increase above baseline
Bearing Cone	Temperature	150°C (300°F)

OUO6046,000C356 –19–25AUG04–1/1

Remove and Install Final Drive Assembly

NOTE: Right-side final drive axle shown. Left-side axle is similar.

1. Cab tractors: Remove cab. (See Remove Cab in Section 90, Group 15.)
2. Straddle mount tractors: Remove ROLL-GARD™. (See Remove and Install ROLL-GARD™—Straddle Mount in Section 90, Group 10.)
3. Isolated open operator station: Remove platform. (See Remove Isolated Open Operator Station in Section 90, Group 16.)
4. Drain transmission/differential.
5. Disconnect draft link sway bar from final drive housing.
6. Remove rear wheel.

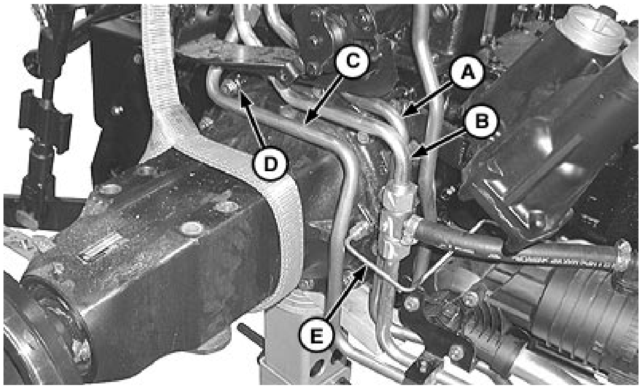
NOTE: Close all openings using caps and plugs.

All hydraulic lines are located on right-hand side only.

Routing of hydraulic lines (A—C) varies depending on SCV configuration of machine.

Tag or label hydraulic lines and connection points to aid during installation.

7. Disconnect lines (A—C) if equipped.
8. Disconnect brake supply line (E).
9. Attach lifting chains or strap to final drive housing.
10. Remove twelve cap screws (D).
11. Remove final drive assembly.



LV10233 –UN–01SEP04

A—Hydraulic Line
B—Hydraulic Line
C—Hydraulic Line
D—Cap Screw (12 used)
E—Brake Supply Line

ROLL-GARD is a trademark of Deere & Company

Continued on next page

NOTE: To inspect or replace final drive pinion shaft, brakes must be removed. (See Remove and Inspect Brakes in Section 60, Group 10.)

12. Make repairs as necessary. (See procedures in Section 50, Group 30.)

13. Clean mating surfaces of final drive and differential casings using Cure Primer. Apply Flexible Form-In-Place Gasket or an equivalent to mating surfaces.

14. Install final drive assembly. Tighten cap screws to specification.

Specification

Final Drive Assembly Cap Screw—Torque	128 N•m (94 lb-ft)

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

15. Install new O-rings and connect hydraulic lines (A—C), if equipped, and brake supply line (E).

16. Connect draft link sway bar.

17. Fill transmission with specified transmission/hydraulic oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

18. Bleed brakes. (See Reference 260-15-009, Bleed Rear Brakes in TM2197 Section 260, Group 15.)

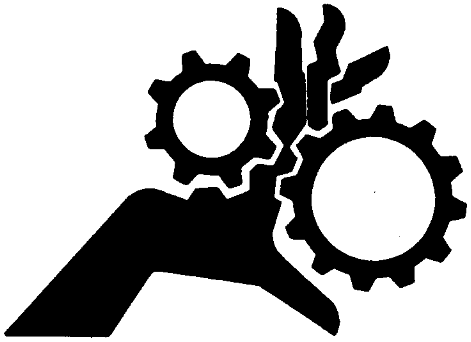
19. Straddle mount tractors: Install ROLL-GARD. (See Remove and Install ROLL-GARD—Straddle Mount and Remove and Install ROLL-GARD—Isolated Open Operator Station in Section 90, Group 10.)

20. Isolated open operator station: Install platform. (See Install Isolated Open Operator Station in Section 90, Group 16.)

21. Cab tractors: Install cab. (See Install Cab in Section 90, Group 15.)

OUO6046,000C351 –19–25AUG04–2/2

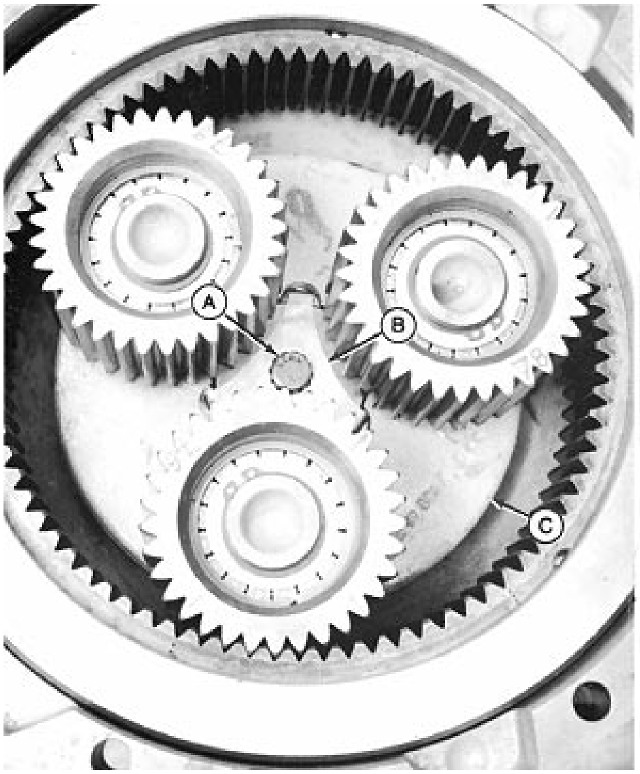
Remove and Inspect Planetary Drive Assembly



T6639GK –UN–19OCT88

⚠ **CAUTION: Gears may turn. Keep fingers away from planetary gears.**

1. Remove lock plate (B).
2. Remove cap screw (A).
3. Remove planetary carrier assembly (C).



LV102 –UN–03MAR92

A—Cap Screw
B—Lock Plate
C—Planetary Carrier Assembly

Continued on next page

OUO6046,000C357 –19–25AUG04–1/3

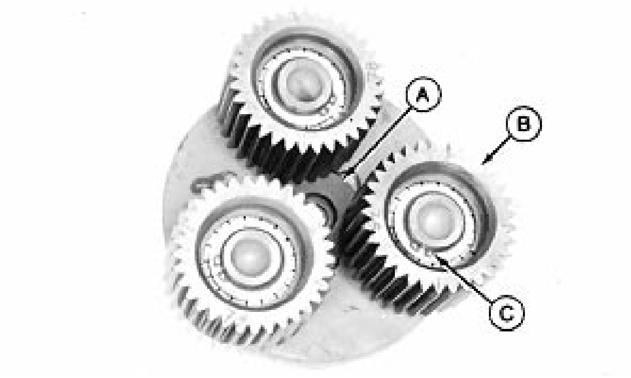
NOTE: Planetary gears are press fit on carrier studs.

4. Remove snap ring (C).

5. Remove planetary gear (B) using a two-jaw puller.

6. Remove spacer (A).

A—Spacer
B—Planetary Gear
C—Snap Ring



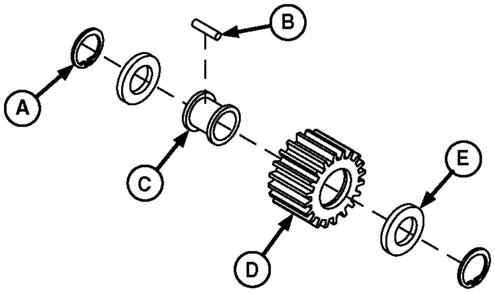
LV555 –UN–03MAR92

OUO6046,000C357 –19–25AUG04–2/3

7. Disassemble parts (A—E).

8. Inspect all parts for wear or damage. Replace as necessary.

A—Retaining Ring (2 used)
B—Roller (17 used)
C—Bearing Race
D—Planetary Gear
E—Thrust Washer (2 used)



LV100AE –UN–18APR96

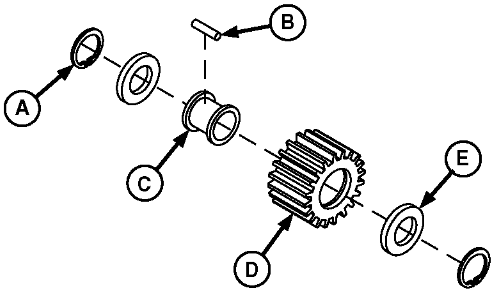
OUO6046,000C357 –19–25AUG04–3/3

Install Planetary Drive Assembly

NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

1. Assemble parts (A—E).

A—Retaining Ring (2 used)
B—Roller (17 used)
C—Bearing Race
D—Planetary Gear
E—Thrust Washer (2 used)



LV100AE –UN–18APR96

Continued on next page

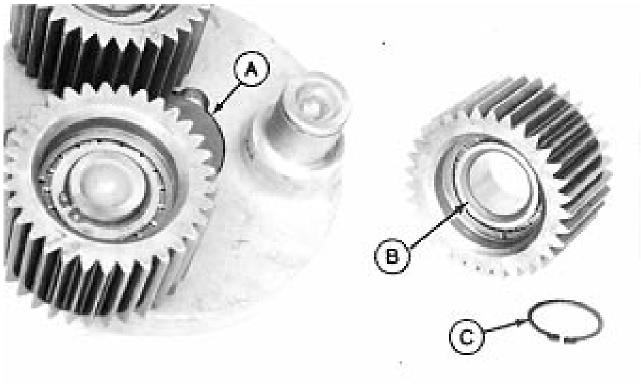
OUO6046,000C352 –19–25AUG04–1/3

2. Install spacer (A).

3. Install planetary gears with bevel (B) facing carrier using a bushing, bearing, and seal driver set and a press.

4. Install snap ring (C).

A—Spacer
B—Bevel
C—Snap Ring



LV556 –UN–03MAR92

Continued on next page

OUO6046,000C352 –19–25AUG04–2/3

IMPORTANT: Before assembling and adjusting final drives, rear axle should be bolted to a tractor wheel.

5. Attach final drive housing to a rear tractor wheel.

6. Install planetary carrier assembly (C) onto the axle shaft. Do not install cap screw (A).

NOTE: See Section 99, Group 05 for instructions to make turning tool.

7. Rotate final drive housing through three complete revolutions in each direction using DFLV1A Final Drive Turning Tool (D) to ensure proper seating of bearing rollers.

8. Rotate final drive housing a minimum of ten revolutions using a torque wrench and turning tool to determine rolling drag torque. This is the baseline rolling drag torque.

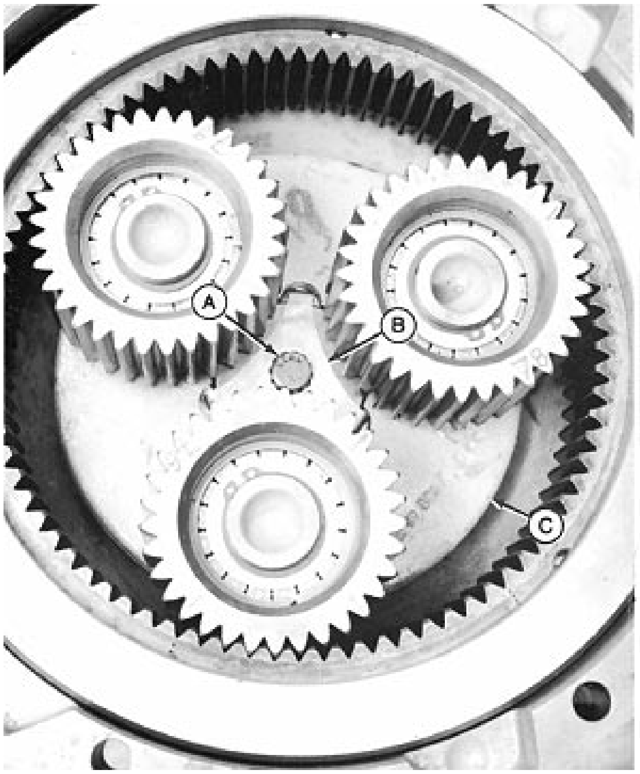
9. Install a new cap screw (A). Tighten cap screw until the rolling drag torque increases 9 N•m (80 lb-in.) above the baseline rolling drag torque.

Specification

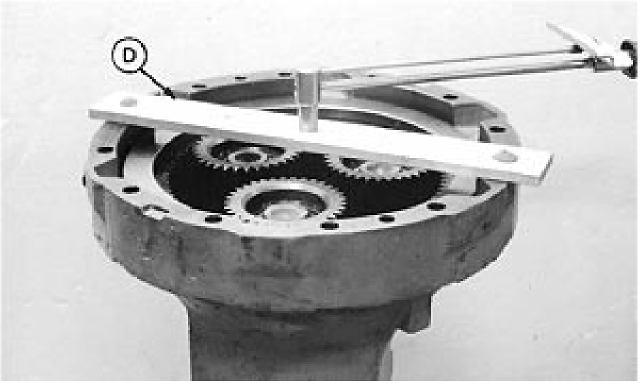
Final Drive Housing—Rolling Drag Torque .... 9 N•m (80 lb-in.) increase above baseline

10. Install lock plate (B).

A—Special Cap Screw
B—Lock Plate
C—Planetary Carrier Assembly
D—DFLV1A Final Drive Turning Tool



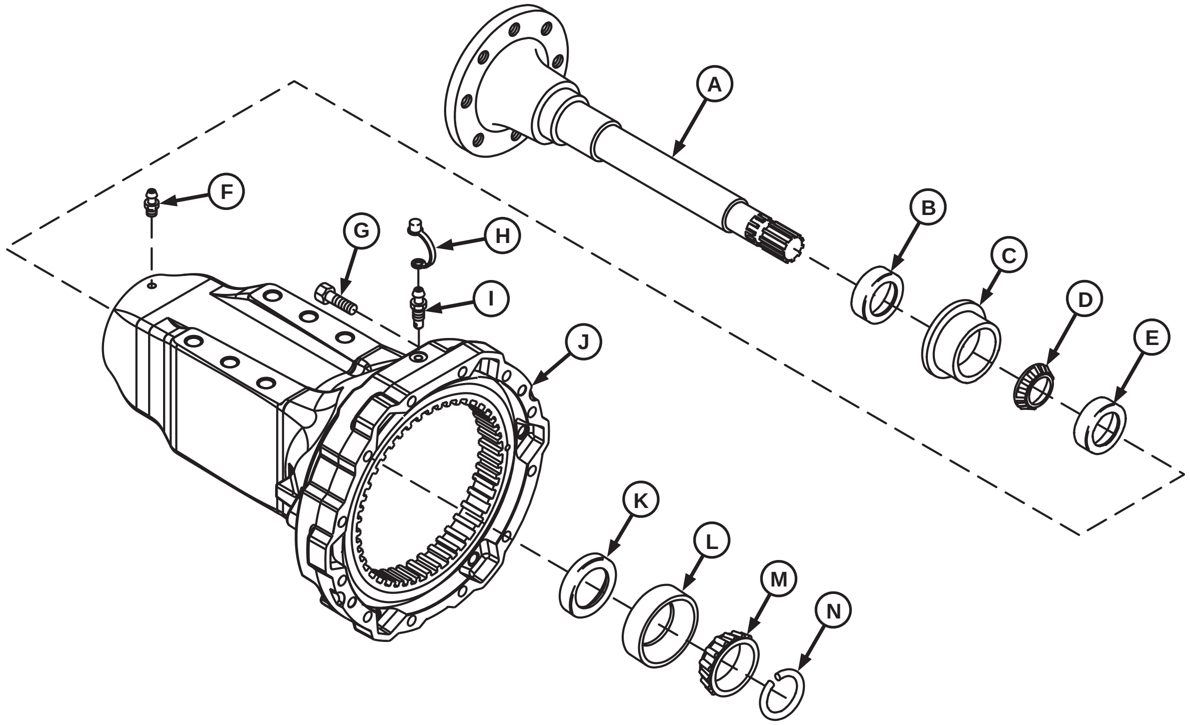
LV102 –UN–03MAR92



LV101 –UN–03MAR92

OUO6046,000C352 –19–25AUG04–3/3

Remove, Inspect, and Install Axle Shaft Assembly



A—Axle Shaft
B—Seal
C—Backup Ring
D—Bearing Cone
E—Bearing Cup
F—Grease Fitting
G—Plug (2 used)
H—Cap
I—Brake Bleeder
J—Final Drive Housing
K—Seal
L—Bearing Cup
M—Bearing Cone
N—Retaining Ring

1. Remove planetary drive assembly. (See Remove and Inspect Planetary Drive Assembly in Section 50, Group 30.)

2. Remove retaining ring (N).

3. Remove axle shaft (A) using a lead hammer on splined end of shaft.

NOTE: Bearing cone (D) is press fit on axle shaft. Bearing cups (E and L) are press fit in final drive housing. Remove bearing cups only if replacement is necessary.

4. Remove bearing cone (D) using a knife-edged puller and a press.

5. Remove backup ring (C) and seal (B).

6. Pry out seal (K).

7. Inspect all parts for wear or damage. Replace as necessary.

Continued on next page

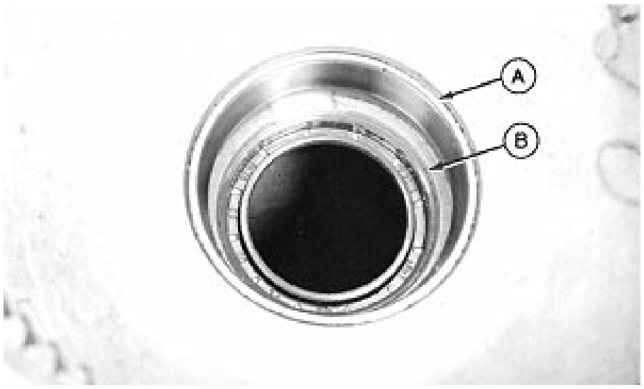
8. Remove bearing cups (E and L), if necessary, using a two-jaw inside puller and a slide hammer.

9. Install bearing cups (A) in both ends of housing until seated, using a bushing, bearing, and seal driver set.

IMPORTANT: Replace all seals. Damaged or used seals will leak.

10. Install seal (B) with lips facing planetary drive end of housing.

11. Apply TY6333 multipurpose grease to lips of seal.

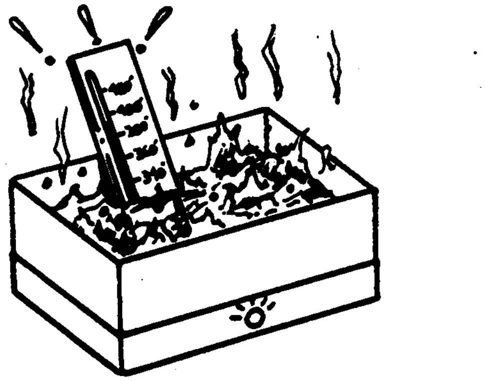


LV104 –UN–03MAR92

A—Bearing Cup
B—Seal

Continued on next page

12. Install seal (A) and backup ring (B) on axle shaft until seated.



CAUTION: DO NOT heat oil over 182°C (360°F). Oil fumes or oil can ignite above 193°C (380°F). Use a thermometer. DO NOT allow a flame or heating element to come in direct contact with the oil. Heat the oil in a well-ventilated area.

13. Heat bearing cones (C and D) to specified temperature, immersed in oil.

Specification

Bearing Cone—Temperature .... 150°C (300°F)

14. Install bearing cone (C) on axle shaft.

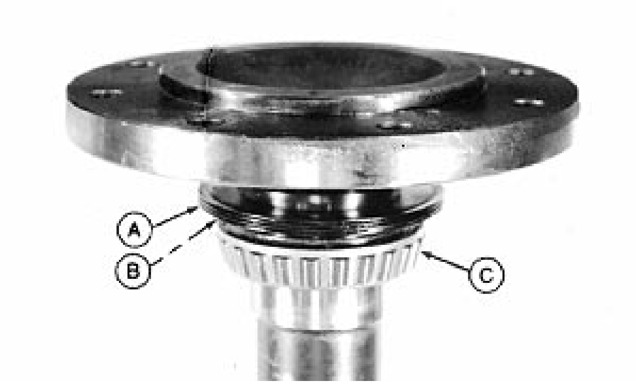
15. Install axle shaft in housing.

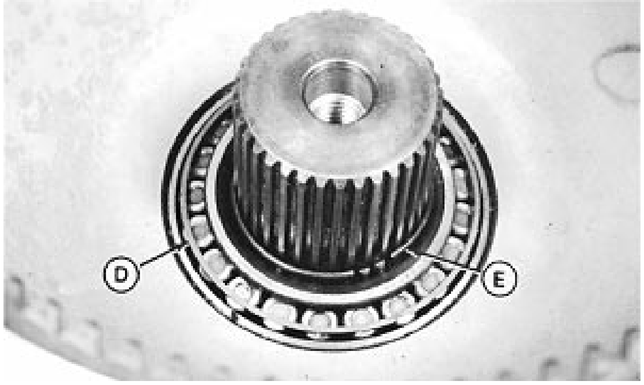
16. Install bearing cone (D) on axle shaft until seated.

17. Install new retaining ring (E).

18. Apply multipurpose grease to hub and axle shaft bearing at grease fitting.

19. Install planetary drive assembly. (See Install Planetary Drive Assembly in Section 50, Group 30.)





A—Seal
B—Backup Ring
C—Bearing Cone
D—Bearing Cone
E—Retaining Ring

OUO6046,000C353 –19–25AUG04–4/4

Hi-Crop Final Drives

Other Material

Number	Name	Use
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Clean mating surface of differential and axle housings and axle housings and Hi-Crop final drive cover
PM38657 (U.S.) PM38628 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Apply between mating surfaces of final drive and differential casings and axle housing and Hi-Crop final drive cover.

LOCTITE is a trademark of Loctite Corp.

OUO6046,000C358 –19–25AUG04–1/1

Specifications

Item	Measurement	Specification
Hi-Crop Axle Assembly-to-Differential Housing Cap Screws	Torque	140 N•m (105 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)
Hi-Crop Final Drive Housing Cover Cap Screws	Torque	140 N•m (105 lb-ft)
Hi-Crop Final Drive-to-Axle Housing Cap Screws	Torque	140 N•m (105 lb-ft)

OUO6046,000C359 –19–25AUG04–1/1

Remove and Install Hi-Crop Axle Assembly

NOTE: If repair is needed on the final drive assembly see procedure in Section 50, Group 30. Do not remove the complete Hi-Crop axle assembly to inspect and repair final drive.

Left-hand side Hi-crop axle is shown. This procedure is similar for right-hand side.

1. Remove left-rear fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

2. Remove ROLL-GARD™. (See Remove and Install ROLL-GARD™—Straddle Mount in Section 90, Group 10.)

50
31
2

ROLL-GARD is a trademark of Deere & Company

OUO6046,000C35A –19–25AUG04–1/5

3. Remove drain plug (A) from final drive housing and drain transmission/hydraulic oil into suitable container.

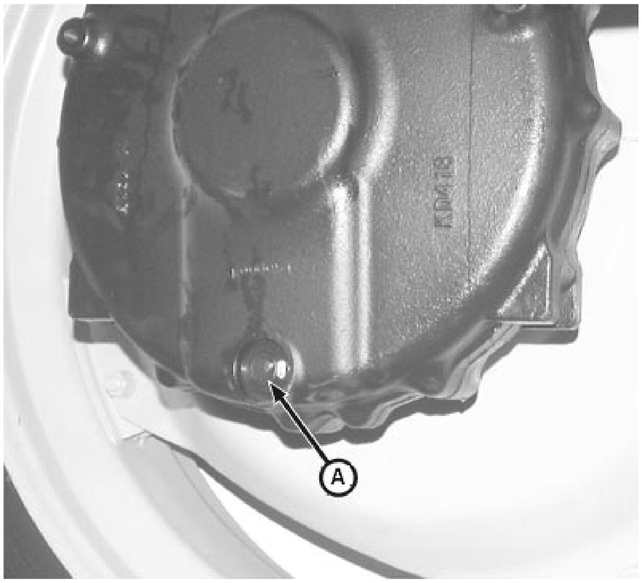
4. Place wood blocks or wheel chocks in front of and behind both front wheels.

5. Position a floor jack under draw bar support and raise rear of tractor.

6. Remove rear wheel.

7. Position a jack stand under differential housing. Make sure jack stand is not under axle housing being removed. Lower floor jack and support tractor on stand.

A—Drain Plug



LV7129 –UN–22FEB02

Continued on next page

OUO6046,000C35A –19–25AUG04–2/5

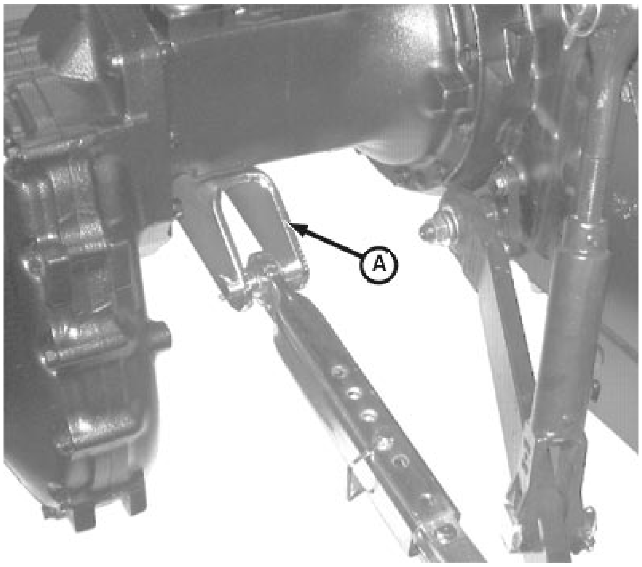
8. Remove two cap screws retaining sway bar bracket (A) to axle housing.

NOTE: Close all openings using caps and plugs.

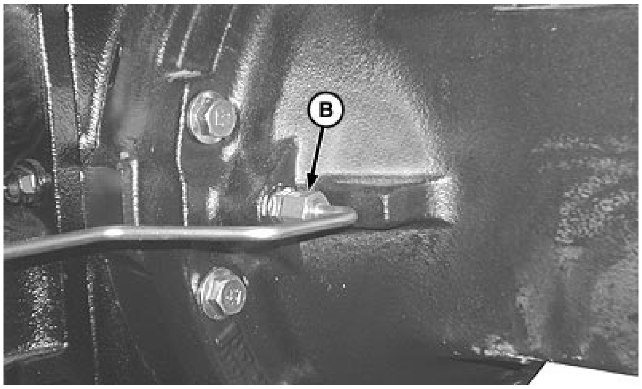
Depending on SCV configuration, hydraulic lines may need to be removed from right-hand side of machine in order to remove right-hand axle assembly.

9. Disconnect brake supply line (B).

A—Sway Bar Bracket
B—Brake Supply Line



Left-Side Sway Bar



Continued on next page

10. Attach suitable lifting straps and hoist to axle assembly as shown.

11. Remove twelve cap screws (A) and remove axle. Make repairs as necessary.

12. Clean mating surface of differential and axle housings using Cure Primer.

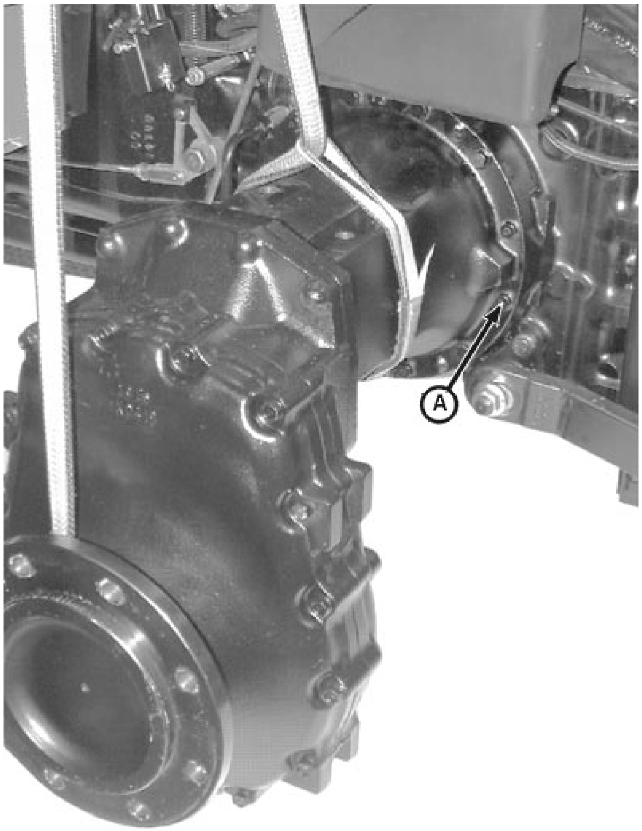
13. Apply Flexible Form-in-Place Gasket or an equivalent to mating surfaces of differential and axle housings.

14. Install axle assembly and cap screws (A). Tighten cap screws to specification.

Specification

Hi-Crop Axle
Assembly-to-Differential Housing
Cap Screws—Torque .... 140 N•m (105 lb-ft)

A—Cap Screw (12 used)



LV7152 –UN–01MAR02

Continued on next page

OUO6046,000C35A –19–25AUG04–4/5

15. Install two cap screws retaining sway bar bracket (A) to axle housing.

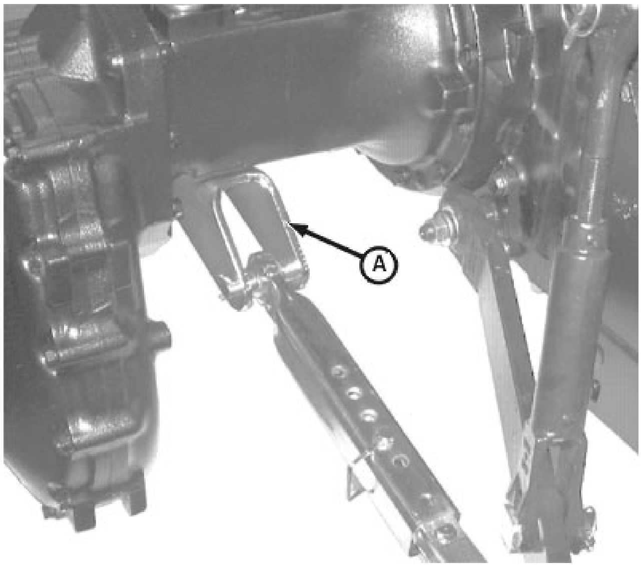
IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

16. Install new O-rings and connect brake supply line (B).
17. Fill transmission with specified transmission/hydraulic oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)
18. Bleed brakes. (See Reference 260-15-009, Bleed Rear Brakes in TM2197 Section 260, Group 15.)
19. Install ROLL-GARD. (See Remove and Install ROLL-GARD™—Straddle Mount in Section 90, Group 10.)
20. Install left-rear fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)
21. Install wheel. Tighten wheel cap screws to specification.

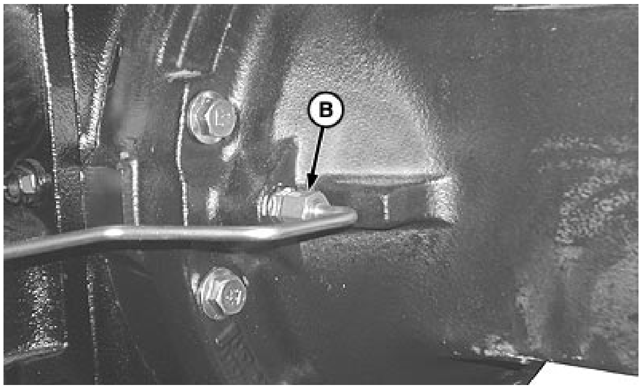
Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque.. 600 N•m (442 lb-ft)

A—Sway Bar Bracket
B—Brake Supply Line



Left-Side Sway Bar



50
31
5

OUO6046,000C35A –19–25AUG04–5/5

Remove, Inspect and Install Hi-Crop Final Drive Assembly

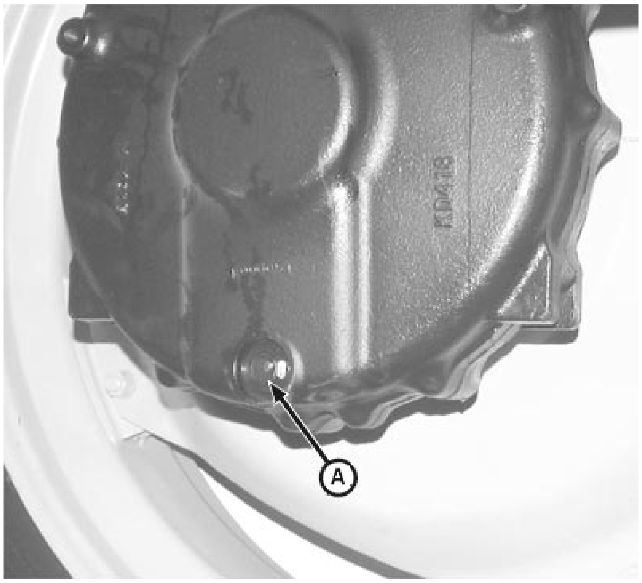
1. Park tractor on level surface and engage park brake. Place wheel chocks or wood blocks in front of and behind front wheels.

2. Remove drain plug (A) from final drive housing and drain transmission/hydraulic oil into suitable container.

NOTE: Left-side final drive assembly shown. Right-side final drive assembly is the same.

3. Raise rear of tractor and remove left-rear wheel. Position a jack stand under rear axle housing and lower floor jack to support tractor on stand.

4. Remove left-rear fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)



LV7129 –UN–22FEB02

A—Drain Plug

Continued on next page

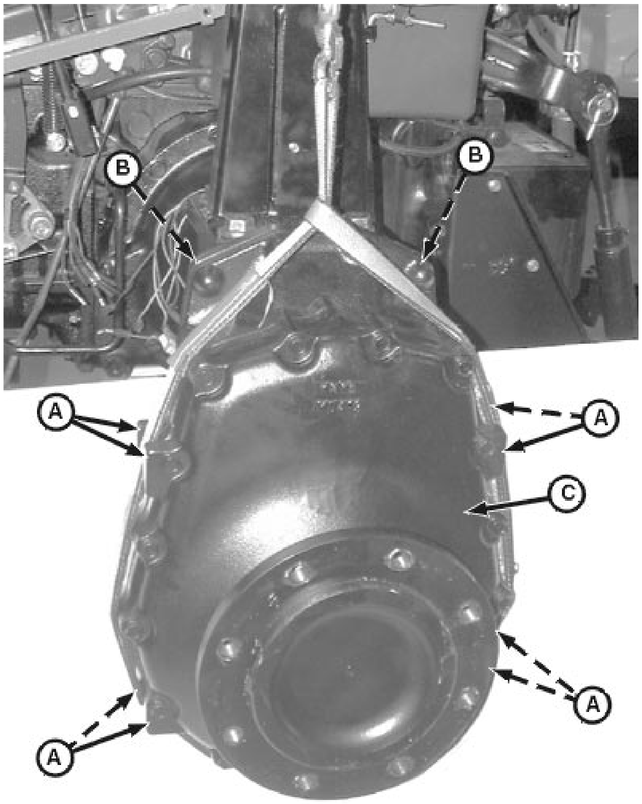
OUO6046,000C35B –19–21OCT05–1/16

CAUTION: To avoid personal injury when removing final drive assembly, make sure the lifting strap is between the housing flanges when using the choker method with lifting strap.

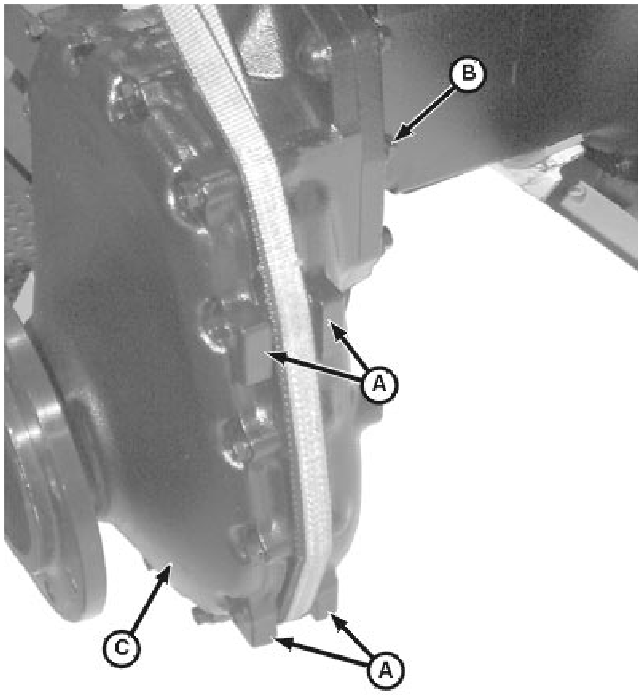
5. Install and position a lifting strap using the choker method around final drive assembly (C) between flanges (A) and attach a suitable hoist to lifting strap as shown.

6. Remove eleven cap screws (B) and final drive assembly (C).

A—Flanges
B—Cap Screw (11 used)
C—Final Drive Assembly



LV7131 –UN–22FEB02



LV7132 –UN–22FEB02

Continued on next page

NOTE: During removal of final drive assembly from axle housing; the axle drive shaft coupler may stay with axle housing or come off with final drive assembly.

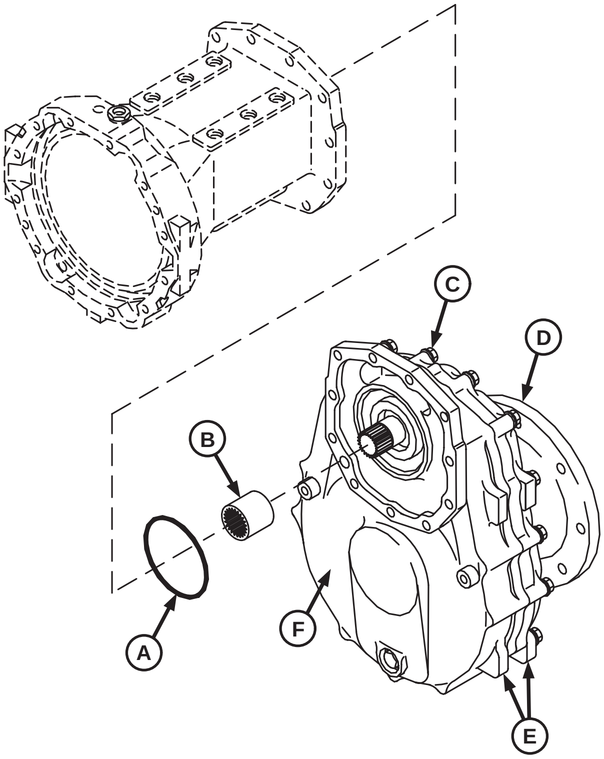
7. Remove and inspect axle drive shaft coupler (B) for damage. Replace if necessary.

IMPORTANT: Replace O-ring. Damaged or used O-rings will leak.

8. Remove and replace O-ring (A).

9. Position final drive assembly (E) with wheel hub (D) down on flat level surface.

10. Remove twelve cap screws (C) and remove cover (F).

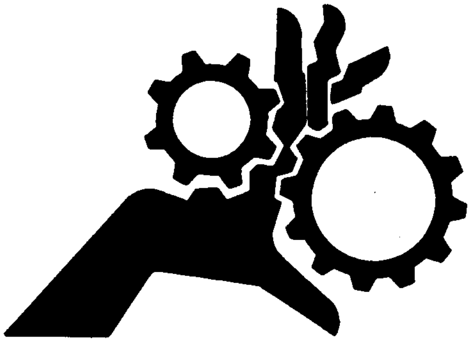


LV7133 –UN–20FEB02

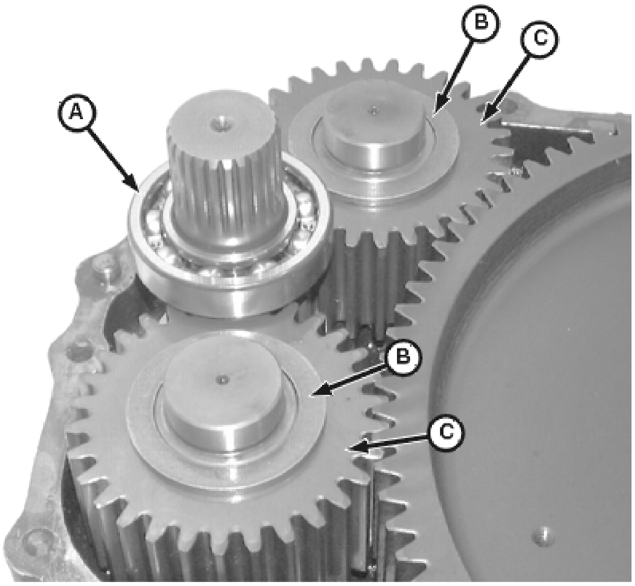
A—O-Ring
B—Axle Drive Shaft Coupler
C—Cap Screw (12 used)
D—Wheel Hub
E—Final Drive Assembly
F—Cover

Continued on next page

OUO6046,000C35B –19–21OCT05–3/16



T6639GK –UN–19OCT88

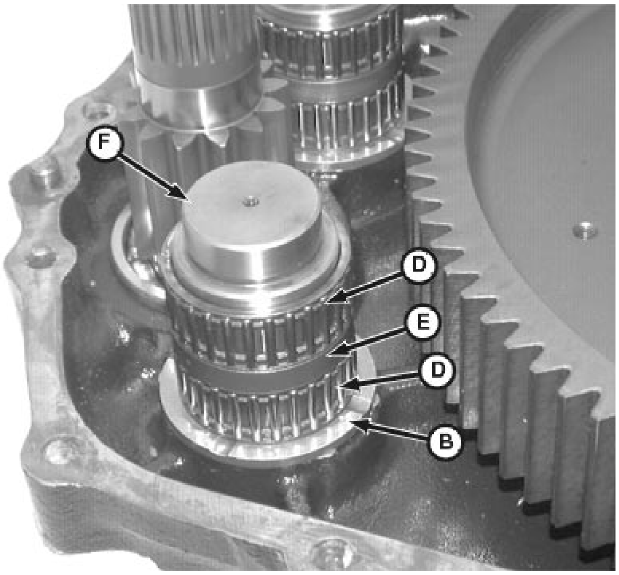


LV7134 –UN–22FEB02

CAUTION: Gears may turn. To avoid personal injury keep fingers away from meshing gear teeth.

11. Remove bearing (A) using a three-jawed bearing puller.
12. Remove two spacers (B) and idler gears (C).
13. Remove needle bearings (D), collar (E) and spacer (B) from idler shaft (F). Repeat this step for opposite side.
14. Inspect parts (A—E) for wear or damage. Replace if necessary.

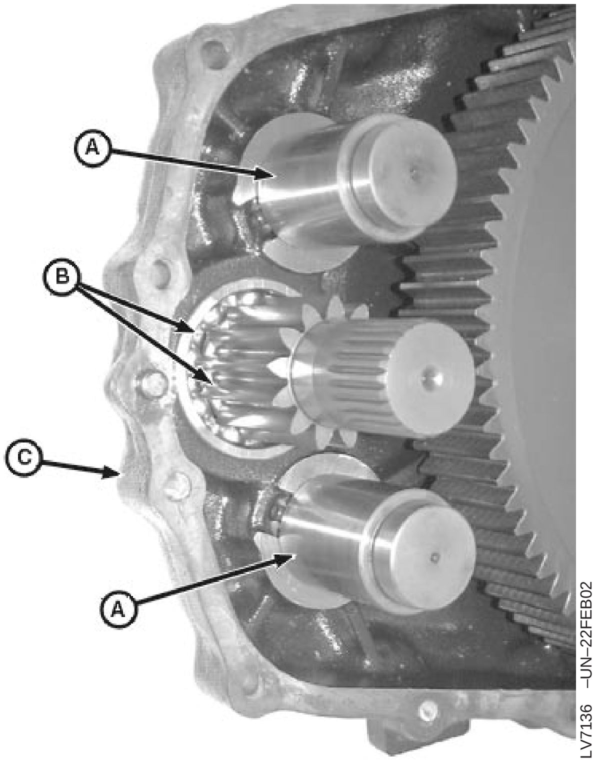
A—Bearing
B—Spacer (4 used)
C—Idler Gear (2 used)
D—Needle Bearing (4 used)
E—Collar (2 used)
F—Idler Shaft (2 used)

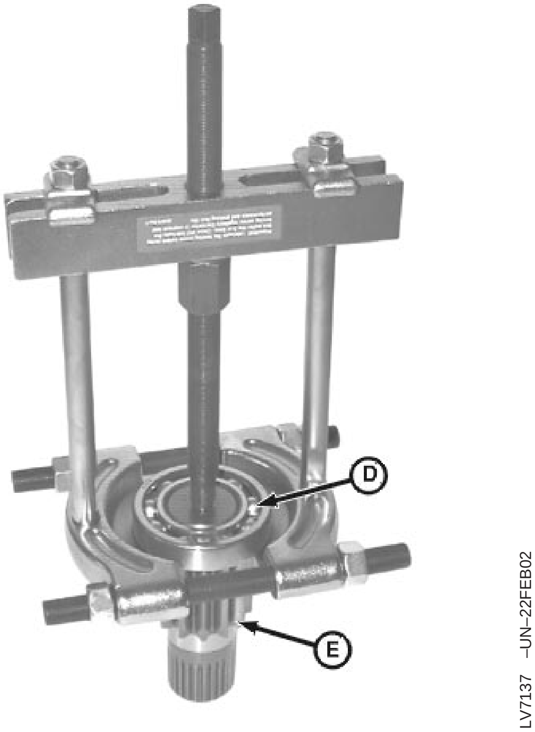


LV7135 –UN–22FEB02

Continued on next page

OUO6046,000C35B –19–21OCT05–4/16





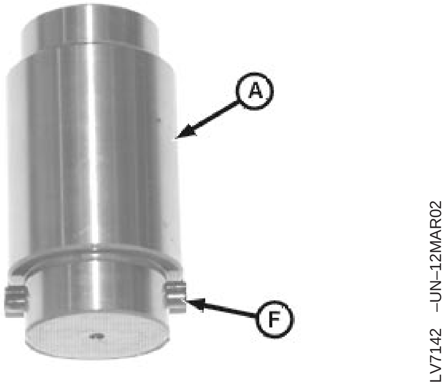
NOTE: Idler shafts and pinion shaft bearing are slip fit in housing bores.

15. Remove two idler shafts (A) and pinion and bearing (B) from housing (C).

NOTE: Bearing (D) is a press fit on pinion shaft (E). Remove bearing only if replacement is necessary.

16. Inspect bearing (D) and pinion shaft (E) for wear or damage. Remove bearing using a knife edge bearing puller, if necessary.

17. Inspect idler shafts (A) and roll pins (F) for damage. Replace if necessary.



A—Idler Shaft (2 used)
B—Pinion Shaft and Bearing
C—Housing
D—Bearing
E—Pinion Shaft
F—Roll Pin

Continued on next page

NOTE: Bearing (A) is a press fit. Remove only if replacement is necessary.

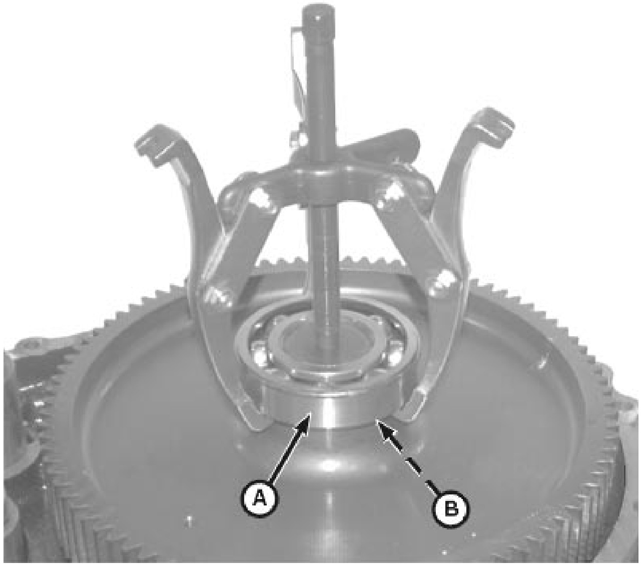
18. Remove bearing (A) from axle shaft using a three-jawed bearing puller.

19. Remove spacer (B) located under bearing (A).

20. Install lifting eyes in two threaded 8 mm holes in drive gear (C).

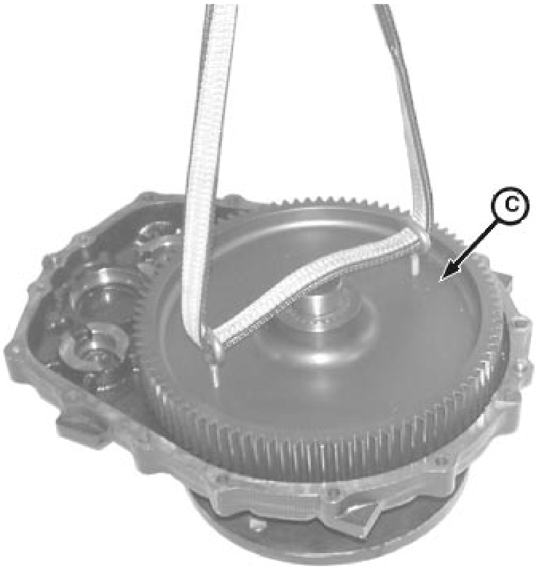
21. Attach lifting strap and suitable hoist and remove drive gear (C).

22. Inspect all parts for wear or damage. Replace if necessary.



LV7138 –UN–22FEB02

A—Bearing
B—Spacer
C—Drive Gear



LV7139 –UN–22FEB02

Continued on next page

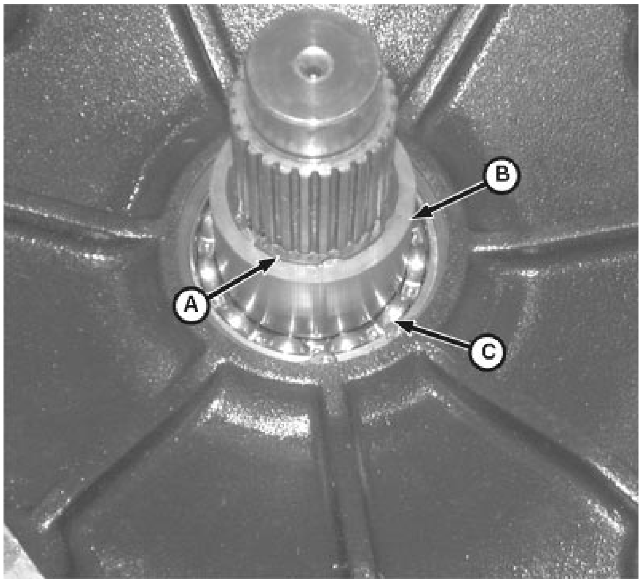
OUO6046,000C35B –19–21OCT05–6/16

23. Remove snap ring (A), collar (B) and snap ring (C).

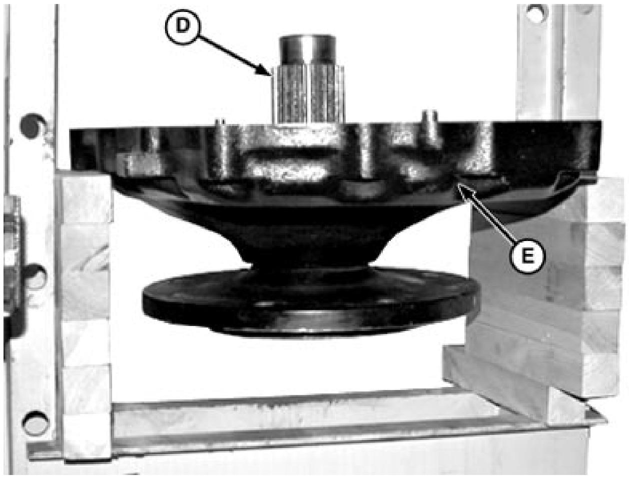
NOTE: Axle shaft is a press fit in housing. Remove only if necessary.

24. Remove axle shaft (D) from housing (E) using a press.

A—Snap Ring
B—Collar
C—Snap Ring
D—Axle Shaft
E—Housing



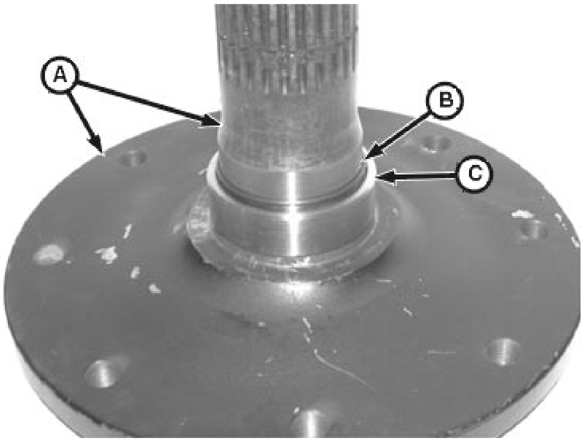
LV7140 –UN–22FEB02



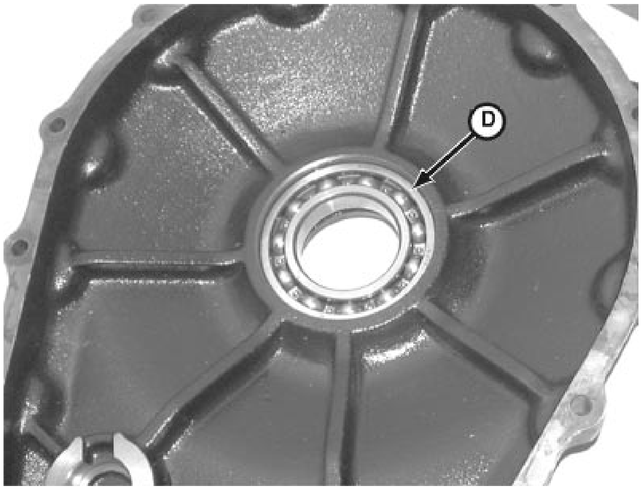
LV12369 –UN–01MAR05

Continued on next page

OUO6046,000C35B –19–21OCT05–7/16



LV7143 –UN–22FEB02



LV7144 –UN–22FEB02

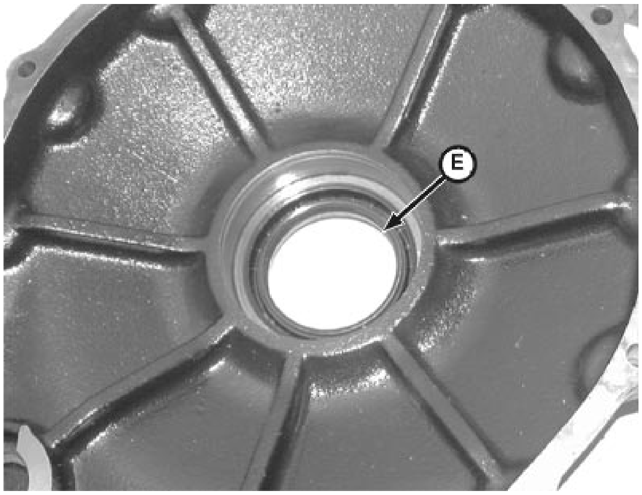
25. Remove spacer (B) and seal collar (C) from axle shaft (A).

26. Remove bearing (D) from housing using a bushing, bearing and seal driver set.

IMPORTANT: Replace oil seal. Damaged or used seal will leak.

27. Remove oil seal (E) from housing using a screw driver. Inspect housing and bores for damage. Replace housing if necessary.

28. Install new oil seal (E) into housing bore until seated.



LV7145 –UN–22FEB02

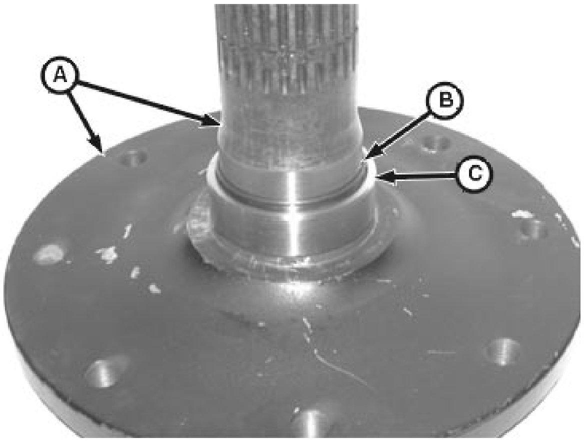
A—Axle Shaft
B—Spacer
C—Seal Collar
D—Bearing
E—Oil Seal

Continued on next page

OUO6046,000C35B –19–21OCT05–8/16

29. Lubricate all parts with clean transmission/hydraulic oil during installation.

30. Install seal collar (C) until seated against hub of axle shaft (A). Install spacer (B).



LV7143 –UN–22FEB02

A—Axle Shaft
B—Spacer
C—Seal Collar

Continued on next page OUO6046,000C35B –19–21OCT05–9/16

31. Lubricate all parts with clean transmission/hydraulic oil during installation.

32. Install axle shaft (A) in housing (B).

33. Install bearing (C) until seated in bore of housing (B) using a piece of pipe and a soft face hammer.

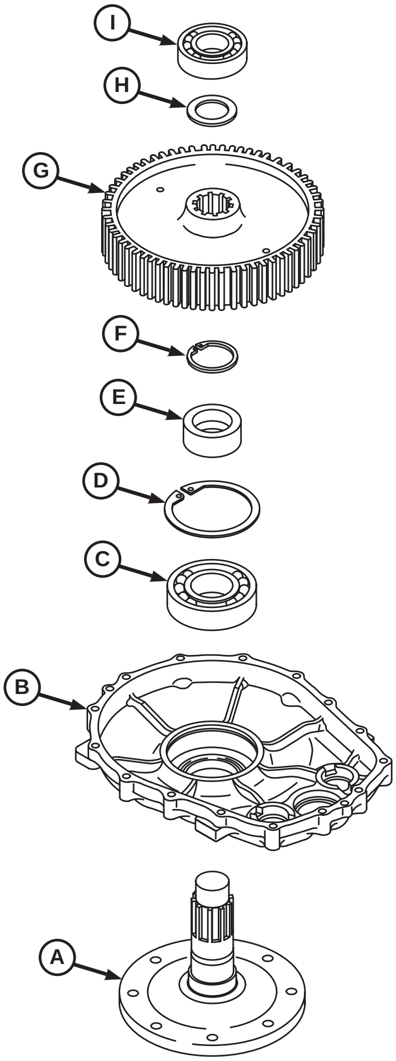
34. Install snap ring (D) collar (E) and snap ring (F).

35. Position the housing and axle shaft assembly on a flat level surface with wheel hub downward.

36. Install lifting eyes in two threaded holes in drive gear (G).

37. Attach lifting strap and suitable hoist and install drive gear (G).

38. Install spacer (H) and install bearing (I) until seated using a bushing, bearing and seal driver set.



LV7146 –UN–22FEB02

A—Axle Shaft
B—Housing
C—Bearing
D—Snap Ring
E—Collar
F—Snap Ring
G—Drive Gear
H—Spacer
I—Bearing

Continued on next page

OUO6046,000C35B –19–21OCT05–10/16

39. Install bearing (A) on pinion shaft (B) using a press.

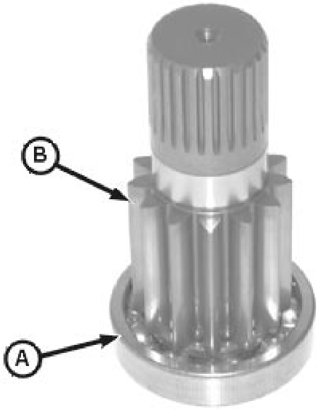
40. Position the housing and axle shaft assembly on flat level surface with wheel hub downward.

41. Align roll pin (D) with notch in housing bore and install idler shafts (C).

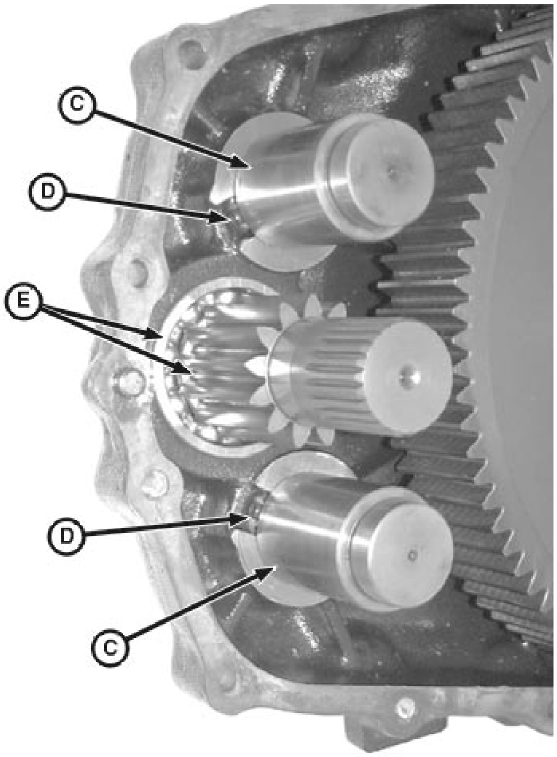
NOTE: The bearing on pinion shaft is a slip fit in housing bore.

42. Install pinion shaft (B) in housing.

A—Bearing
B—Pinion Shaft
C—Idler Shaft (2 used)
D—Roll Pin
E—Pinion Shaft and Bearing



LV7147 –UN–22FEB02



LV7148 –UN–22FEB02

Continued on next page

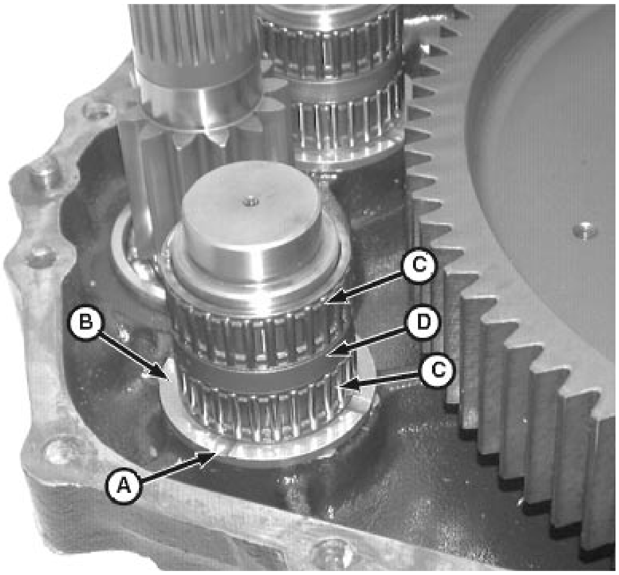
OUO6046,000C35B –19–21OCT05–11/16

43. Lubricate all parts with clean transmission/hydraulic oil during installation.

NOTE: Make sure notches in bottom spacer are facing upward when installed on idler shafts.

44. Install bottom spacer (B) with notches (A) facing upward as shown.

45. Install one needle bearing (C), collar (D) and needle bearing (C) on idler shaft. Repeat this step for remaining idler shaft.



LV7149 –UN–22FEB02

A—Notches
B—Spacer (2 used)
C—Needle Bearing (4 used)
D—Collar (2 used)

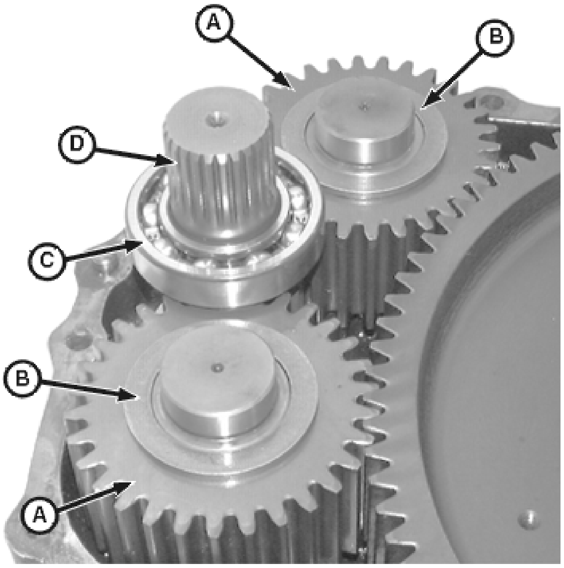
46. Lubricate all parts with clean transmission/hydraulic oil during installation.

47. Install idler gears (A) on shafts.

NOTE: Make sure notches in top spacer are facing downward when installed on idler shafts.

48. Install top spacer (B) with notches facing downward facing idler gear.

49. Install bearing (C) on pinion shaft (D) until seated using a bushing, bearing and seal driver set.



LV7150 –UN–22FEB02

A—Idler Gear (2 used)
B—Spacer (2 used)
C—Bearing
D—Pinion Shaft

Continued on next page

50. Clean mating surface of housing (D) and cover (E) using Cure Primer.

51. Apply Flexible Form-in-Place Gasket or an equivalent to mating surfaces of housing (D) and cover (E).

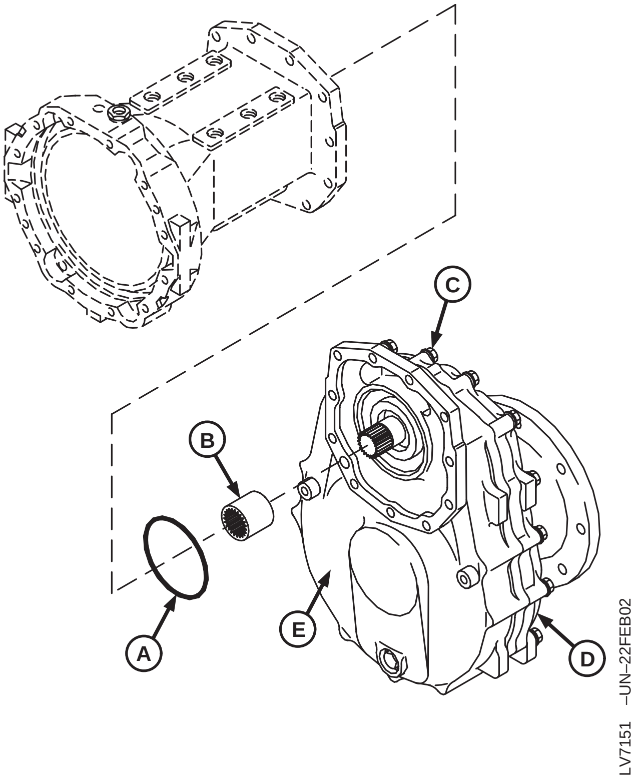
52. Install cover (E) on housing (D).

53. Install twelve cap screws (C) and tighten to specification.

Specification

Hi-Crop Final Drive Housing
Cover Cap Screws—Torque .... 140 N•m (105 lb-ft)

54. Install axle drive shaft coupler (B) and O-ring (A).



A—O-Ring
B—Axle Drive Shaft Coupler
C—Cap Screw (12 used)
D—Housing
E—Cover

Continued on next page

OUO6046,000C35B –19–21OCT05–14/16

CAUTION: To avoid personal injury when installing final drive assembly, make sure the lifting strap is between the housing flanges when using the choker method with lifting strap.

55. Install and position a lifting strap using the choker method around final drive assembly (C) between flanges (A) and attach a suitable hoist to lifting strap as shown.

56. Install eleven cap screws (B) and tighten to specification.

Specification

Hi-Crop Final Drive-to-Axle
Housing Cap Screws—Torque.................................... 140 N•m (105 lb-ft)

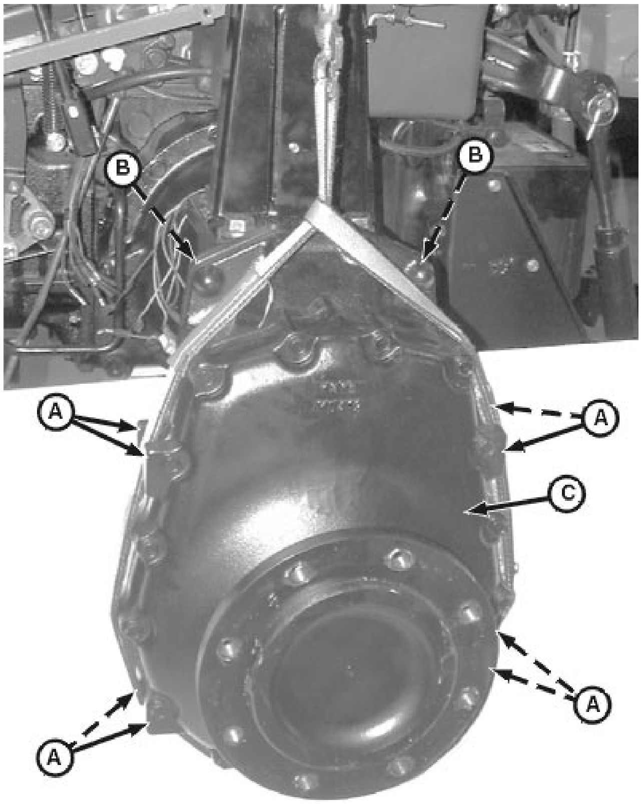
57. Install left-rear fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

58. Install wheel. Tighten wheel cap screws to specifications.

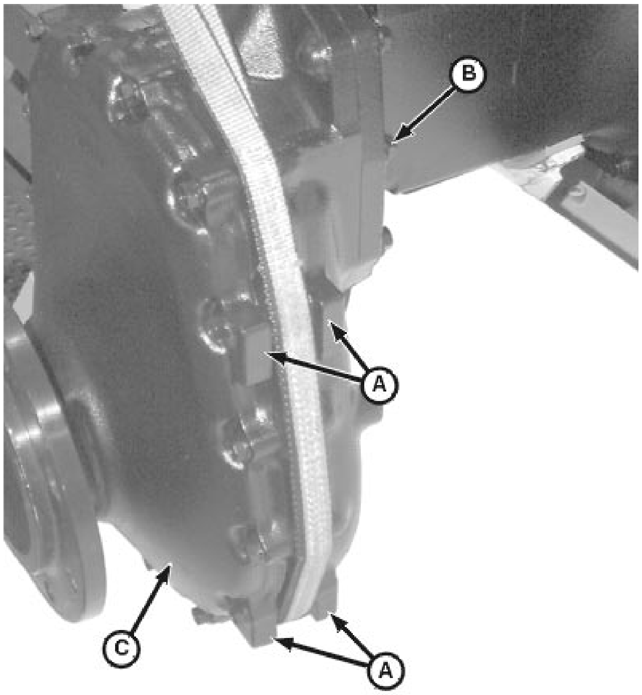
Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque... 600 N•m (442 lb-ft)

A—Flanges
B—Cap Screw (11 used)
C—Final Drive Assembly



LV7131 –UN–22FEB02

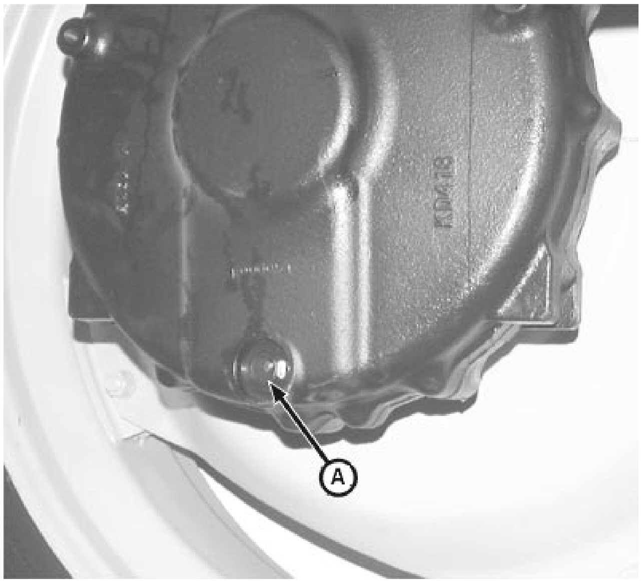


LV7132 –UN–22FEB02

Continued on next page

59. Install drain plug (A) and fill transmission with specified transmission/hydraulic oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

A—Drain Plug



LV7129 –UN–22FEB02

OUO6046,000C35B –19–21OCT05–16/16

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,00002CD –19–21SEP04–1/2

Snap Ring Removal Tool[1] DFT1162

Used to remove and install snap ring from MFWD drop gearbox output shaft.

[1] Fabricated Tool. See Section 99, Group 05 for instructions to fabricate tool.

OUO1082,00002CD –19–21SEP04–2/2

Other Material

Number	Name	Use
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to ID of MFWD drive shaft couplers.

OUO1082,00002D0 –19–21SEP04–1/1

Specifications

Item	Measurement	Specification
MFWD Drop Gearbox Cap Screw	Torque	132 N•m (97 lb-ft)
MFWD Drop Gearbox Cover Cap Screw	Torque	26 N•m (230 lb-in.)
MFWD Drop Gearbox Nut	Torque	60 N•m (44 lb-ft)
MFWD Drive Shaft Guard Cap Screw	Torque	15 N•m (11 lb-ft)
MFWD Axle-to-Frame Cap Screw	Torque	650 N•m (479 lb-ft)
MFWD Front Wheel Cap Screw	Torque	300 N•m (220 lb-ft)

OUO1082,00002CF –19–21SEP04–1/1

MFWD Axle Repair—Use CTM4870

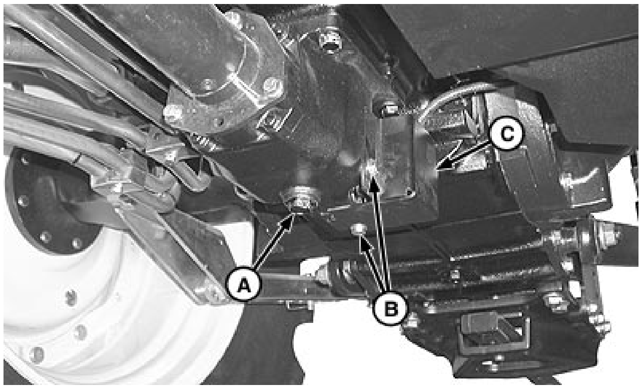
For complete repair information the component technical manual (CTM) is also required. Use the component technical manual in conjunction with this machine manual.

COMPONENT
TECHNICAL
MANUAL

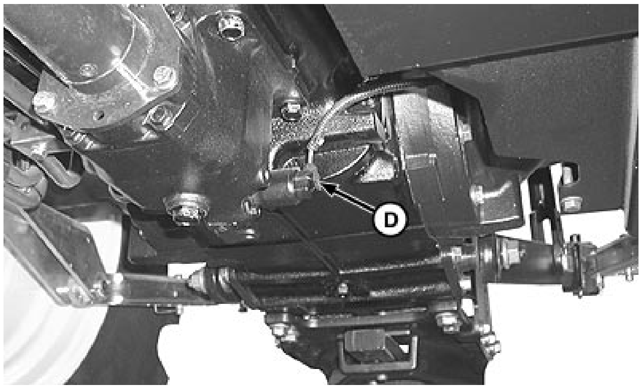
TS225 –UN–17JAN89

OUO1082,0000352 –19–15DEC04–1/1

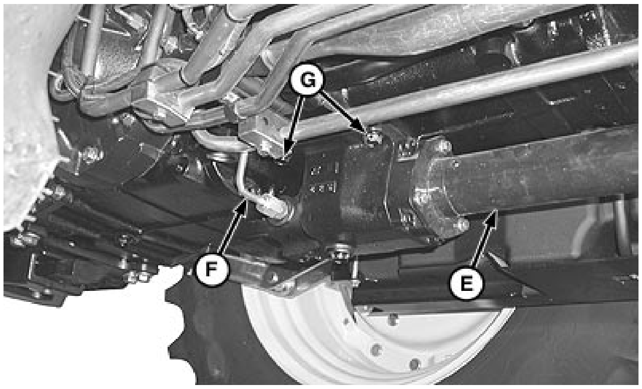
Remove and Install MFWD Drop Gearbox



LV10216 —UN—01SEP04



LV10217 —UN—01SEP04



LV10218 —UN—01SEP04

A—Drain Plug
B—Cap Screw
C—Shield
D—Solenoid Connector
E—Drive Shaft
F—Hydraulic Line
G—Cap Screw and Washer (4 used)

1. Remove plug (A) and drain transmission/hydraulic oil.

2. Remove cap screws (B) and shield (C).

3. Disconnect solenoid connector (D).

4. Remove MFWD drive shaft (E). (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

NOTE: Close all openings using caps and plugs.

5. Disconnect hydraulic line (F). Close all openings using caps and plugs.

6. Remove four cap screws and washers (G) and drop gearbox.

7. Make repairs as necessary. (See Disassemble and Inspect MFWD Drop Gearbox in Section 50, Group 35.)

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

8. Install new O-ring and gearbox. Install cap screws and washers. Tighten cap screws to specification.

Specification	
MFWD Drop Gearbox Cap Screw—Torque	132 N•m (97 lb-ft)

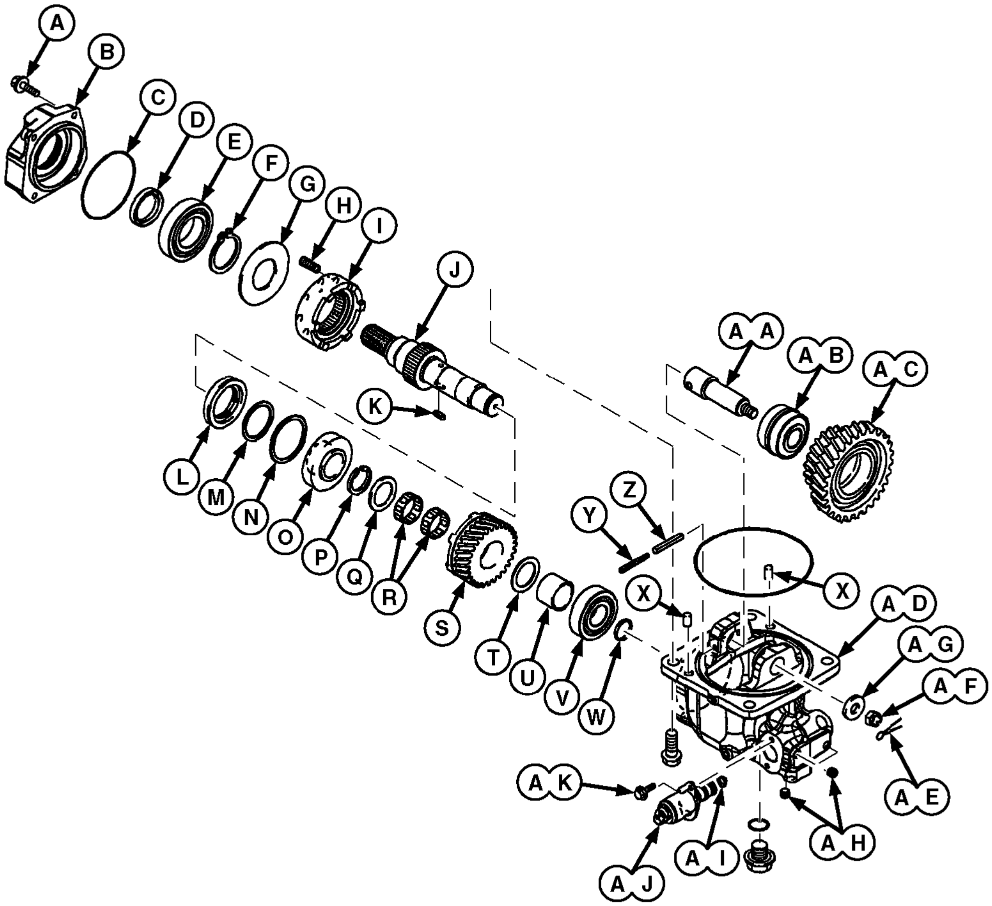
9. Install MFWD drive shaft (E). (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)

10. Install new O-ring and connect hydraulic line (F).

11. Install plug (A) and new O-ring. Fill transmission with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

OUO1073,0001DA9 –19–01NOV04–1/1

Disassemble and Inspect MFWD Drop Gearbox



LV10215 –UN–21SEP04

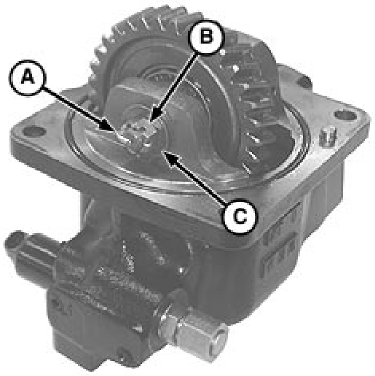
A—Cap Screw (4 used)
B—Gearbox Cover
C—O-Ring
D—Cover Seal
E—Bearing
F—Snap Ring
G—Holder
H—Spring (8 used)
I—Shift Collar
J—Output Shaft
K—Woodruff Key
L—Piston
M—Piston Seal
N—Piston Seal
O—Cylinder
P—Snap Ring
Q—Washer
R—Needle Rollers
S—Idler Gear
T—Washer
U—Spacer
V—Bearing
W—Seal
X—Dowel Pins
Y—Spring Pin
Z—Spring Pin
AA—Top Shaft
AB—Bearings
AC—Gear
AD—Gearbox Case
AE—Cotter Pin
AF—Slotted Nut
AG—Washer
AH—Plugs
AI—Screen
AJ—Solenoid Valve
AK—Cap Screw (2 used)

Continued on next page

OUO1073,0001DAA –19–01NOV04–1/14

1. Remove cotter pin (A), slotted nut (B), and washer (C).

A—Cotter Pin
B—Slotted Nut
C—Washer

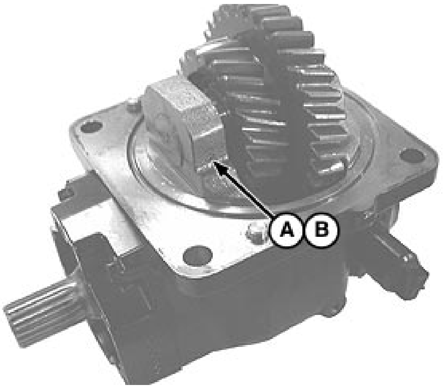


LV10238 –UN–08SEP04

OUO1073,0001DAA –19–01NOV04–2/14

2. Remove spring pins (A and B) using a punch and hammer.

A—Spring Pin
B—Spring Pin



LV10239 –UN–08SEP04

Continued on next page

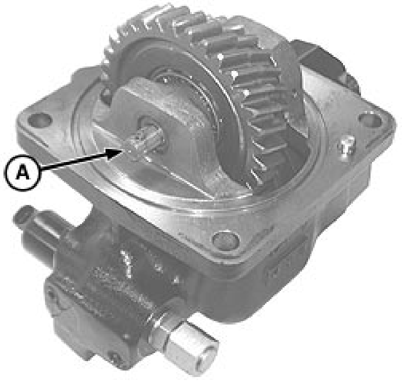
OUO1073,0001DAA –19–01NOV04–3/14

3. Remove top shaft (A) using a brass drift and hammer.

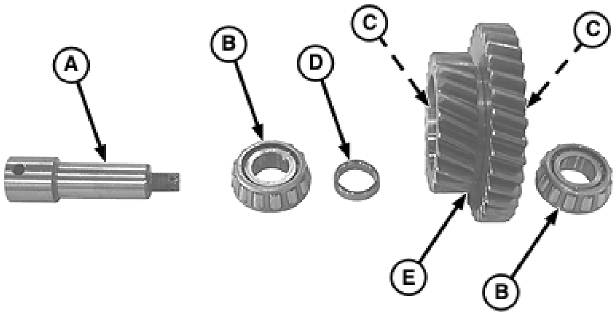
4. Remove bearing cones (B), bearing cups (C) and spacer (D) from gear (E).

5. Remove snap ring (F) only if necessary.

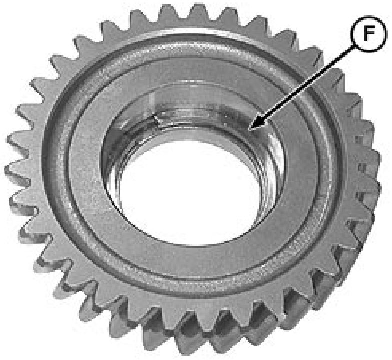
A—Top Shaft
B—Bearing Cones
C—Bearing Cups
D—Spacer
E—Gear
F—Snap Ring



LV10240 –UN–08SEP04



LV10241 –UN–08SEP04

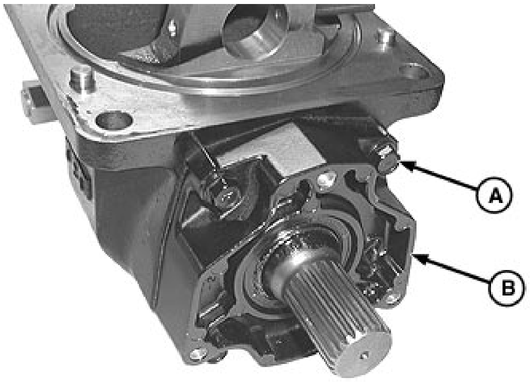


LV10242 –UN–08SEP04

OUO1073,0001DAA –19–01NOV04–4/14

6. Remove cap screws (A) and cover (B).

A—Cap Screw (4 used)
B—Cover



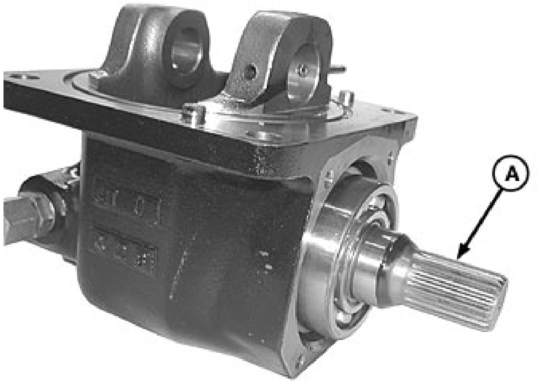
LV10243 –UN–08SEP04

Continued on next page

OUO1073,0001DAA –19–01NOV04–5/14

7. Remove output shaft assembly (A) from gearbox.

A—Output Shaft Assembly

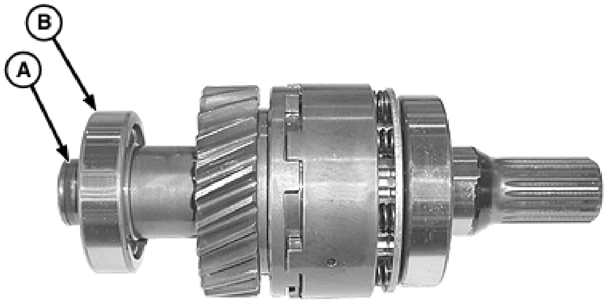


LV10244 –UN–08SEP04

OUO1073,0001DAA –19–01NOV04–6/14

8. Remove shaft seal (A).
9. Remove bearing (B) using a knife-edged puller and a press.

A—Seal
B—Bearing

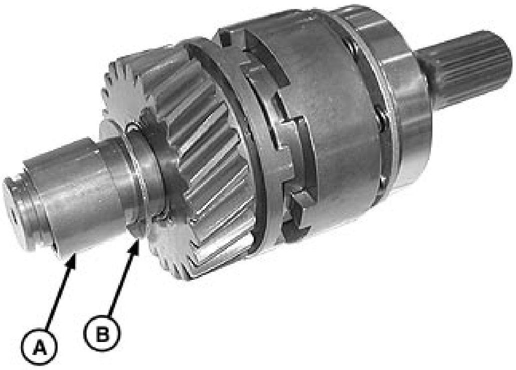


LV10245 –UN–08SEP04

OUO1073,0001DAA –19–01NOV04–7/14

10. Remove spacer (A) and washer (B).

A—Spacer
B—Washer

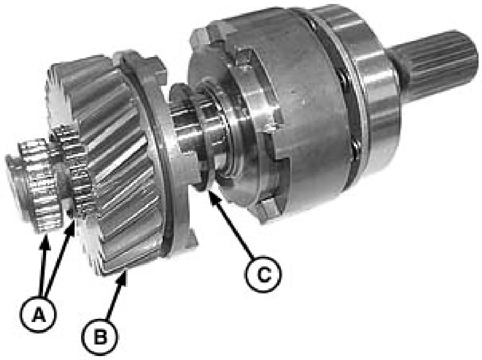


LV10246 –UN–08SEP04

OUO1073,0001DAA –19–01NOV04–8/14

11. Remove needle rollers (A), idler gear (B), and washer (C) from shaft.

A—Needle Rollers
B—Idler Gear
C—Washer



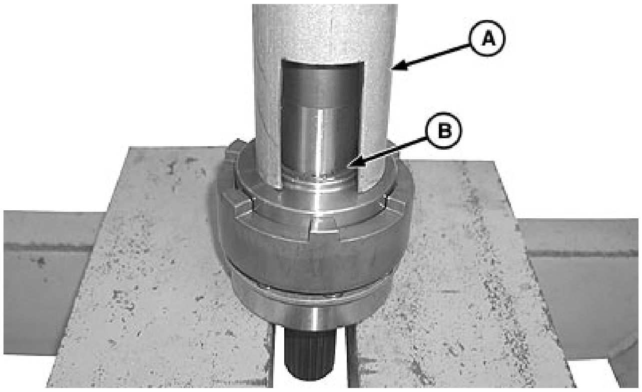
LV10248 –UN–09SEP04

Continued on next page

OUO1073,0001DAA –19–01NOV04–9/14

12. Position shaft assembly in press as shown, compress springs using DFT1162 Snap Ring Removal Tool (A) and remove snap ring (B).

A—DFT1162 Removal Tool
B—Snap Ring

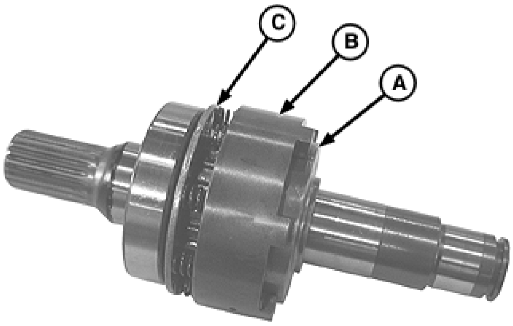


LV10249 –UN–09SEP04

OUO1073,0001DAA –19–01NOV04–10/14

13. Remove cylinder and piston assembly (A), shift collar (B), and springs (C).

A—Cylinder and Piston Assembly
B—Shift Collar
C—Spring (8 used)



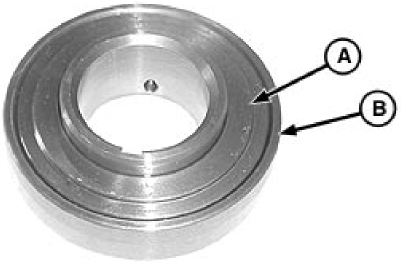
LV10250 –UN–09SEP04

OUO1073,0001DAA –19–01NOV04–11/14

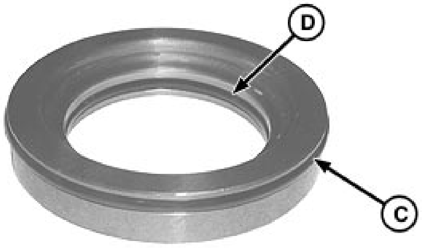
14. Remove piston (A) from cylinder (B).

15. Replace piston seals (C and D) and install piston into cylinder.

A—Piston
B—Cylinder
C—Seal
D—Seal



LV10251 –UN–09SEP04



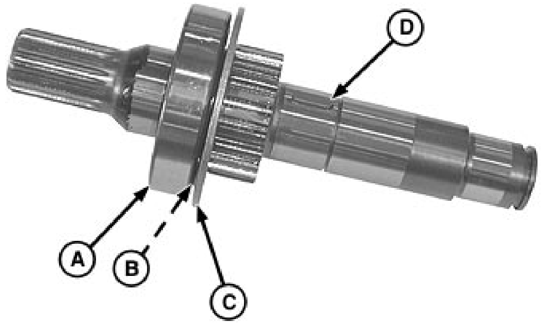
LV10252 –UN–09SEP04

Continued on next page

OUO1073,0001DAA –19–01NOV04–12/14

16. Remove bearing (A) using a knife-edged puller and a press.
17. Remove snap ring (B) and holder (C).
18. Replace key (D) as necessary.
19. Inspect all parts for wear or damage. Replace as necessary.

IMPORTANT: Replace all seals. Damaged or used seals will leak.



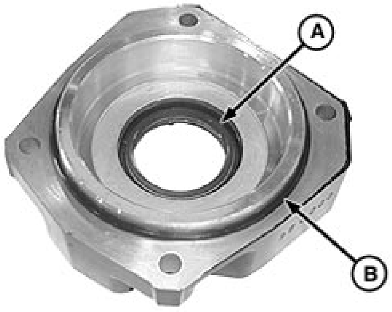
LV10253 –UN–09SEP04

A—Bearing
B—Snap Ring
C—Holder
D—Woodruff Key

OUO1073,0001DAA –19–01NOV04–13/14

20. Remove seal (A) using a screwdriver. Install new seal, with lips facing toward shaft assembly, into cover bore until it stops, using a bearing, bushing, and seal driver set.
21. Replace O-ring (B).

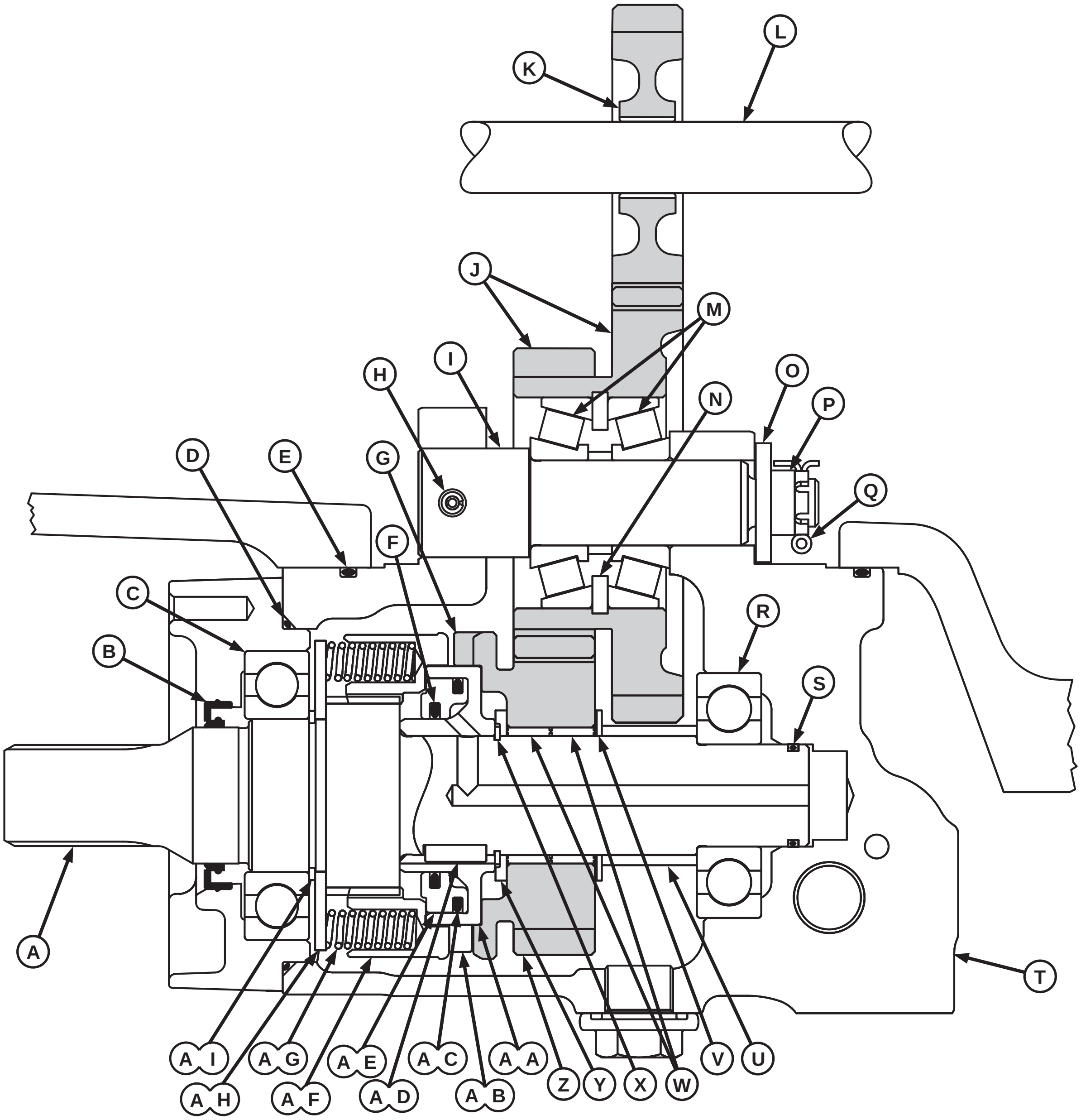
A—Seal
B—O-Ring



LV10254 –UN–21SEP04

OUO1073,0001DAA –19–01NOV04–14/14

MFWD Drop Gearbox Cross Section


L
K
J
M
H
I
O
N
P
D
E
G
Q
F
C
R
B
S
A
T
A I
A G
A E
A C
A A
V
U
Z
Y
X
W
A H
A F
A D
A B

LV10227 –UN–09DEC04

Continued on next page

OUO1073,0001DAB –19–01NOV04–1/2

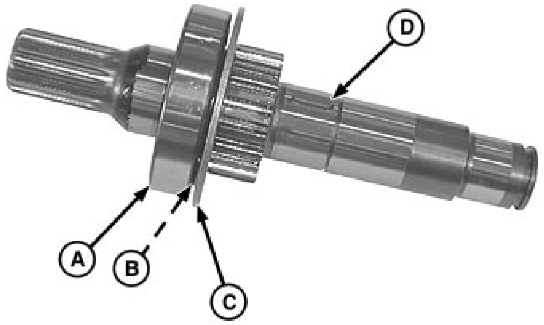
A—Output Shaft
B—Seal
C—Bearing
D—O-Ring
E—O-Ring
F—Seal
G—Idler Gear Engagement Teeth
H—Spring Pins
I—Top Shaft
J—Drive Gear
K—MFWD Driven Gear
L—Differential Drive Shaft
M—Bearings
N—Snap Ring
O—Washer
P—Slotted Nut
Q—Cotter Pin
R—Bearing
S—Seal
T—Case
U—Spacer
V—Washer
W—Needle Rollers
X—Snap Ring
Y—Washer
Z—Idler Gear
AA—Cylinder
AB—Shift Collar Engagement Teeth
AC—Seal
AD—Woodruff Key
AE—Piston
AF—Shift Collar
AG—Spring (8 used)
AH—Holder
AI—Snap Ring

OUO1073,0001DAB –19–01NOV04–2/2

Assemble MFWD Drop Gearbox

1. Install holder (C) and snap ring (B).
2. Install bearing (A) using a press.

A—Bearing
B—Snap Ring
C—Holder
D—Woodruff Key

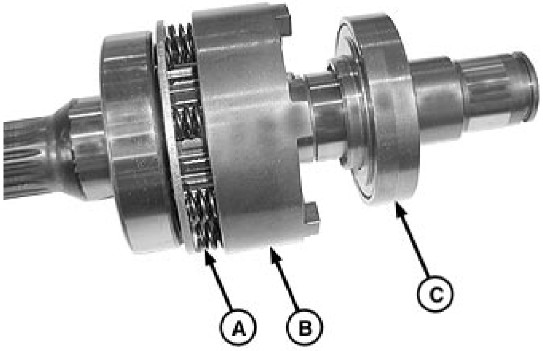


LV10253 –UN–09SEP04

OUO1073,0001DAC –19–01NOV04–1/12

3. Install springs (A) and shift collar (B).
4. Install cylinder and piston assembly (C).

A—Spring (8 used)
B—Shift Collar
C—Cylinder and Piston Assembly

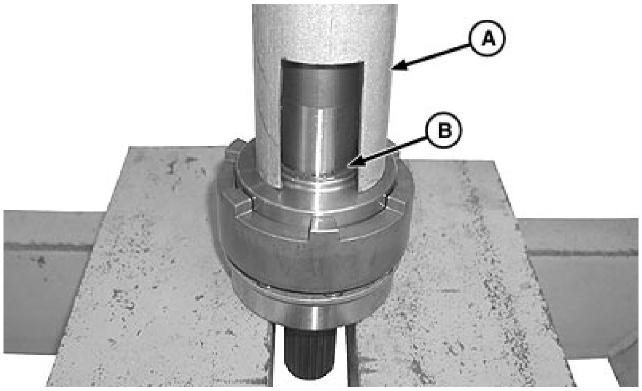


LV10255 –UN–09SEP04

OUO1073,0001DAC –19–01NOV04–2/12

5. Position shaft assembly in press as shown, compress springs using DFT1162 Snap Ring Removal Tool (A) and install snap ring (B).

A—DFT1162 Snap Ring Removal Tool
B—Snap Ring



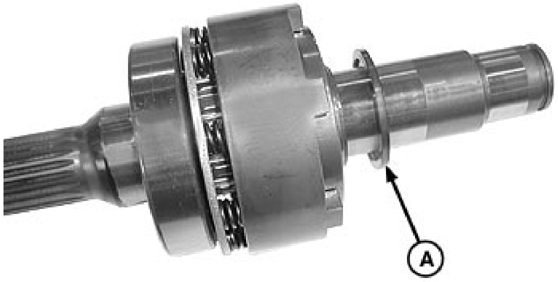
LV10249 –UN–09SEP04

Continued on next page

OUO1073,0001DAC –19–01NOV04–3/12

6. Install washer (A) with groove facing snap ring.

A—Washer

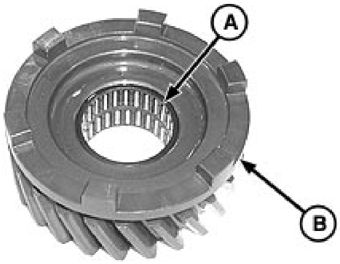


LV10256 –UN–09SEP04

OUO1073,0001DAC –19–01NOV04–4/12

7. Install needle rollers (A) into idler gear (B).

A—Needle Roller (2 used)
B—Idler Gear



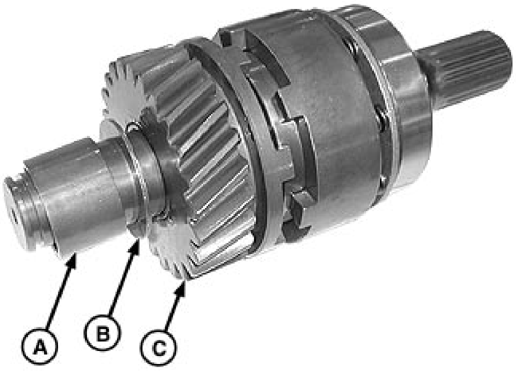
LV10257 –UN–09SEP04

OUO1073,0001DAC –19–01NOV04–5/12

IMPORTANT: Grooves in washer (B) must face gear (C).

8. Install idler gear (C), washer (B), and spacer (A).

A—Spacer
B—Washer
C—Idler Gear



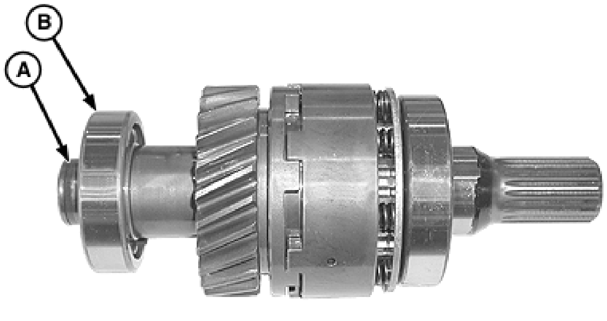
LV10247 –UN–08SEP04

OUO1073,0001DAC –19–01NOV04–6/12

9. Install bearing (B) using a press.

10. Install shaft seal (A).

A—Seal
B—Bearing



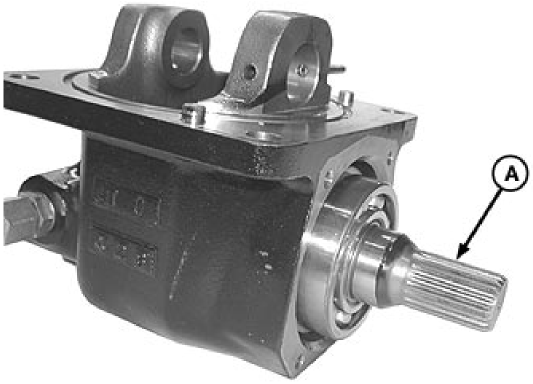
LV10245 –UN–08SEP04

Continued on next page

OUO1073,0001DAC –19–01NOV04–7/12

11. Install output shaft assembly (A) into gearbox.

A—Output Shaft Assembly



LV10244 –UN–08SEP04

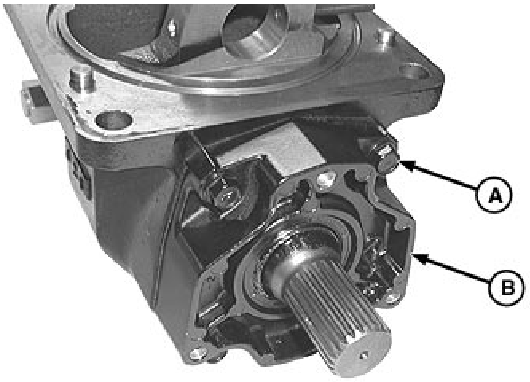
OUO1073,0001DAC –19–01NOV04–8/12

12. Install cover (B) and cap screws (A). Tighten cap screws to specification.

Specification

MFWD Drop Gearbox Cover Cap Screw—Torque	26 N•m (230 lb-in.)

A—Cap Screw (4 used)
B—Cover



LV10243 –UN–08SEP04

Continued on next page

OUO1073,0001DAC –19–01NOV04–9/12

13. Install snap ring (F) into gear if removed.

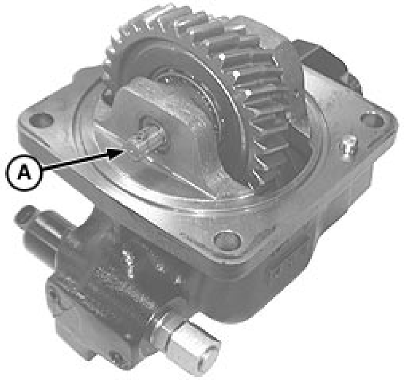
14. Install bearing cups (C) into gear.

15. Assemble bearing cones and spacer (D) to gear.

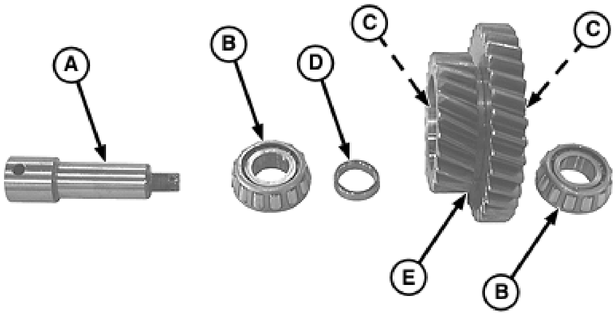
NOTE: Align hole in shaft with hole in gearbox when installing shaft.

16. Position gear, bearings, and spacer between ears of gearbox and install shaft using a brass drift and hammer. Shoulder on shaft must be flush with bearing cone.

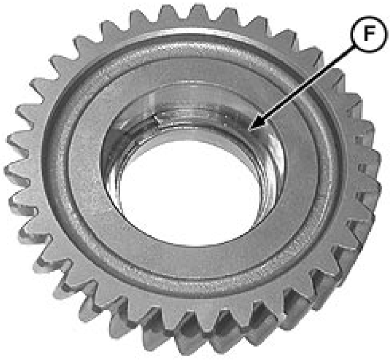
A—Top Shaft
B—Bearing Cones
C—Bearing Cups
D—Spacer
E—Gear
F—Snap Ring



LV10240 –UN–08SEP04



LV10241 –UN–08SEP04



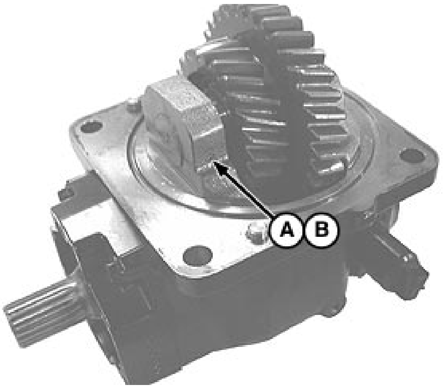
LV10242 –UN–08SEP04

OUO1073,0001DAC –19–01NOV04–10/12

NOTE: Install small diameter spring pin inside large diameter spring pin, with splits facing 180° (opposite) from each other, after installing large diameter spring pin in drop gearbox.

17. Install spring pins (A and B) using a punch and hammer.

A—Spring Pin
B—Spring Pin



LV10239 –UN–08SEP04

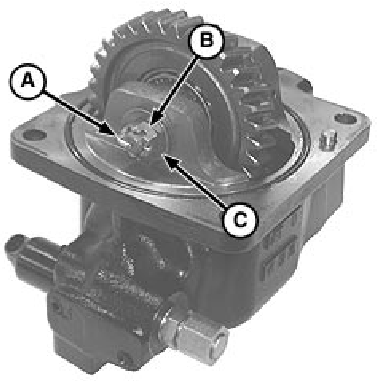
Continued on next page

OUO1073,0001DAC –19–01NOV04–11/12

18. Install washer (C) and slotted nut (B). Tighten nut to specification and install cotter pin (A).

Specification	
MFWD Drop Gearbox Nut— Torque	60 N•m (44 lb-ft)

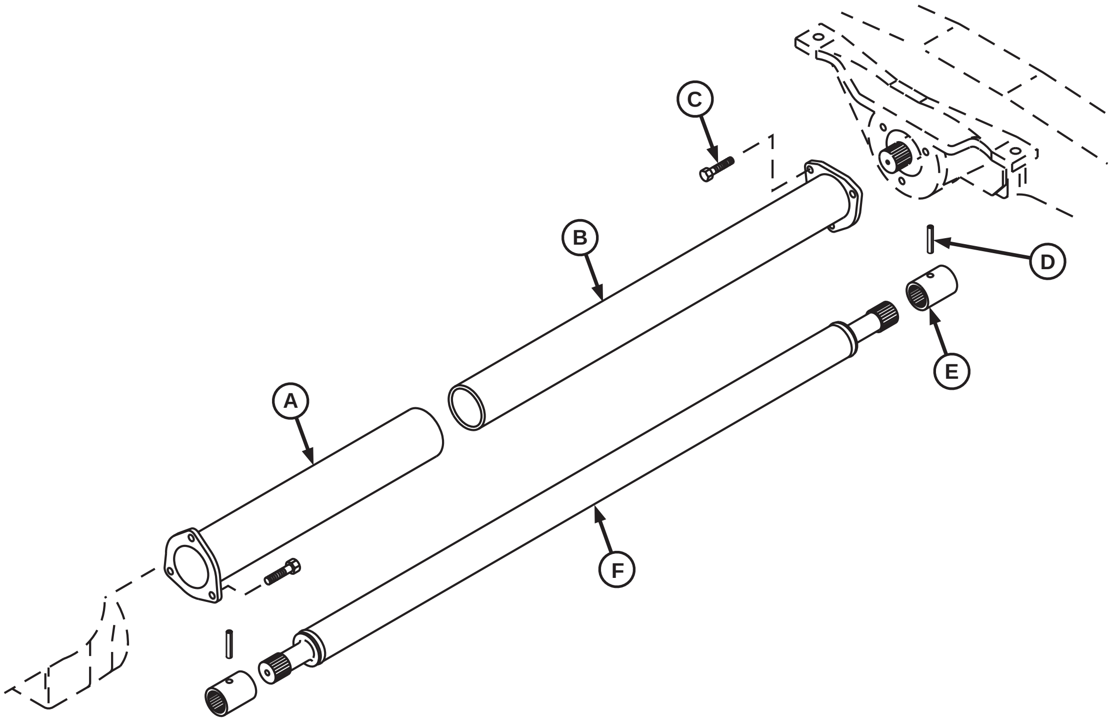
A—Cotter Pin
B—Slotted Nut
C—Washer



LV10238 –UN–08SEP04

OUO1073,0001DAC –19–01NOV04–12/12

Remove, Inspect and Install MFWD Drive Shaft



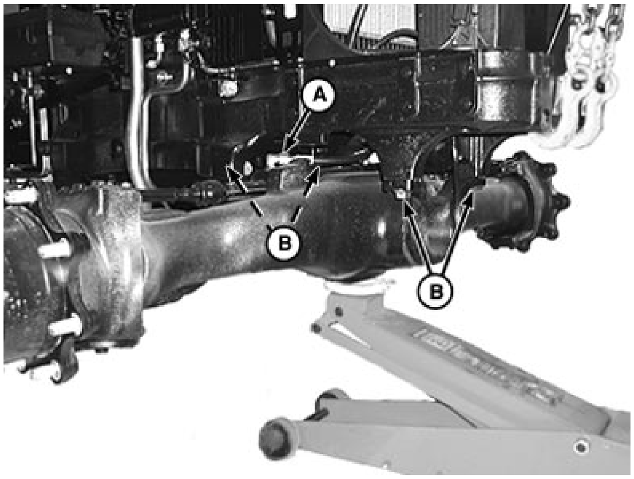
A—Drive Shaft Guard (Inner)
B—Drive Shaft Guard (Outer)
C—Cap Screw (6 used)
D—Spring Pin (2 used)
E—Coupler (2 used)
F—Drive Shaft

1. Remove cap screws (C).
2. Slide guards (A and B) together.
3. Remove spring pins (D) using a hammer and punch.
4. Slide couplers (E) toward drive shaft (F) and remove drive shaft assembly.
5. Inspect parts for wear or damage. Check drive shaft for straightness. Replace parts as necessary.
6. Apply Moly High Temperature EP Grease to ID of couplers (E).
7. Install drive shaft assembly.
8. Install cap screws (C). Tighten to Specification.

Specification	
MFWD Drive Shaft Guard Cap Screw—Torque	15 N•m (11 lb-ft)

OUO1073,0001DAD –19–01NOV04–1/1

Remove and Install MFWD Axle Housing Assembly



A—Hydraulic Hose (2 used)
B—Cap Screw (4 used)

1. Remove drive shaft. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 35.)
2. Raise front of tractor. Securely support tractor below the engine/transmission junction.

CAUTION: Axle will pivot to one side when one wheel is removed. Install wooden blocks between the axle stops and frame to prevent axle from tipping.

3. Install wooden blocks between axle and frame.
4. Remove front wheels.
5. Position a transmission jack or floor jack under center of axle as shown. Ensure axle will be stable on the floor jack when cap screws (B) are removed.
6. Disconnect hydraulic hoses (A). Close all openings using caps and plugs.
7. Remove cap screws (B) and lower axle.
8. Make repairs as necessary. (See procedures for MFWD AXLE 00.16 in CTM4870.)
9. Raise axle into position and install cap screws. Tighten cap screws to specification.

Specification

Specification	
MFWD Axle-to-Frame Cap Screw—Torque	650 N•m (479 lb-ft)

10. Connect hydraulic hoses.
11. Install front wheels. Tighten wheel cap screws to specification.

Specification

Specification	
MFWD Front Wheel Cap Screw—Torque	300 N•m (220 lb-ft)

12. Remove all supports and lower tractor.
13. Install drive shaft.

50
35
17

OUO1073,0001DAE –19–01NOV04–1/1

Creeper Assembly

Other Material

Number	Name	Use
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cleans parts and speeds cure of sealant used between mating surfaces of creeper assembly.
PM38657 (U.S.) PM38628 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Apply between mating surfaces of creeper assembly.

LOCTITE is a trademark of Loctite Corp.

OUO6046,000C35C –19–26AUG04–1/1

Specifications

Item	Measurement	Specification
Creeper Assembly Cap Screw	Torque	50 N•m (37 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

OUO6046,000C35D –19–26AUG04–1/1

Remove and Install Creeper Assembly

NOTE: Platform removed for illustration purposes.

Differential lock pedal and lever extension shown removed.

1. Drain transmission oil.

2. Place wood blocks or wheel chocks in front of and behind both front wheels.

3. Position a floor jack under draw bar support and raise rear of tractor.

4. Remove right-hand rear wheel.

5. Position a jack stand under right-hand axle housing. Lower floor jack and support tractor on stand.

6. Remove cap screws (A).

NOTE: Orientation of hydraulic lines and placement of clamps will vary depending on SCV configuration of tractor. Some lines may need to be removed in order to access creeper assembly.

7. Remove clamps (B).

8. Remove filter assembly (C). (See Remove and Install Hydraulic Oil Filter/Manifold in Section 70, Group 05.)

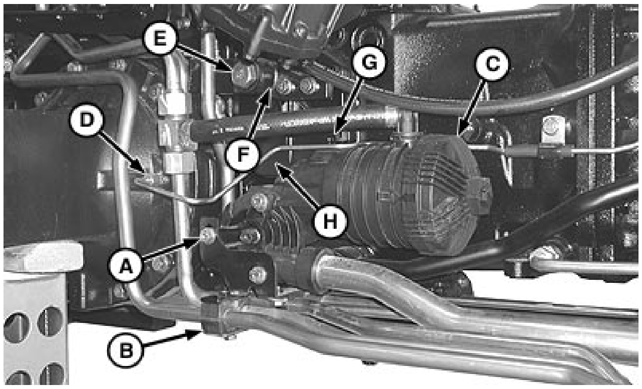
9. Remove supply brake line (D). Cap or plug any openings.

10. Remove shoulder bolt (E) and differential lock lever (F).

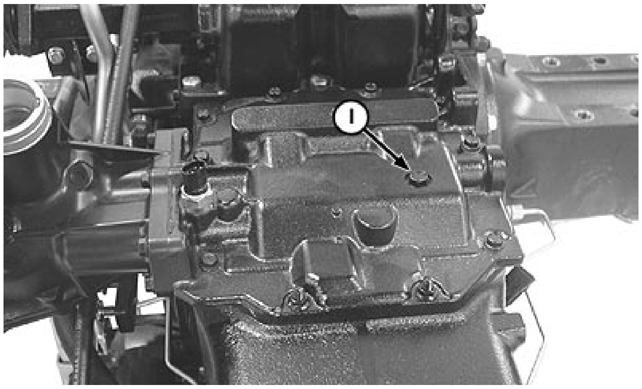
11. Remove cap screws (G).

12. Separate creeper assembly (H) from transmission case with light blows from a plastic hammer. Remove creeper assembly.

13. Make repairs as necessary. (See Disassemble, Inspect, and Assemble Creeper Assembly in Section 50, Group 40.)



LV10236 –UN–01SEP04



LV10237 –UN–01SEP04

A—Cap Screw (3 used)
B—Clamp (3 used)
C—Filter Assembly
D—Supply Brake Line
E—Shoulder Bolt
F—Differential Lock Lever
G—Cap Screw (6 used)
H—Creeper Assembly
I—Stop Screw

Continued on next page

14. Clean mating surface of creeper assembly and transmission case using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

NOTE: If installing an optional creeper kit assembly, remove stop screw (I) and replace screw with an M10 x 30 mm cap screw (supplied with kit).

15. Install creeper assembly (H) and cap screws (G). Tighten cap screws to specification.

Specification

Creeper Assembly Cap Screw—
Torque .... 50 N•m (37 lb-ft)

16. Install differential lock lever (F) and shoulder bolt (E).

17. Install filter assembly (C) and cap screws (A). (See Remove and Install Hydraulic Oil Filter/Manifold in Section 70, Group 05.)

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

18. Install new O-rings and connect supply brake line (D) and any hydraulic line that may have been removed.

19. Install clamps (B).

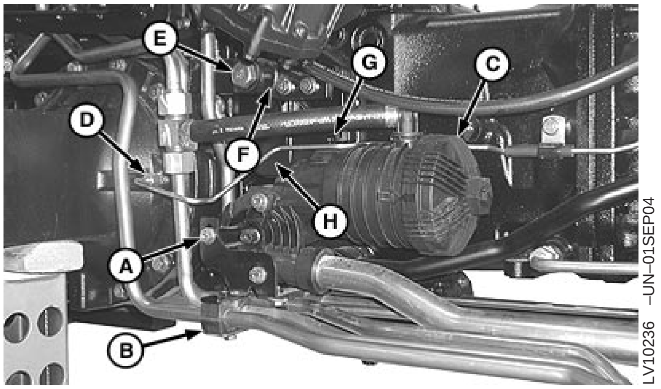
20. Fill transmission with specified transmission/hydraulic oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

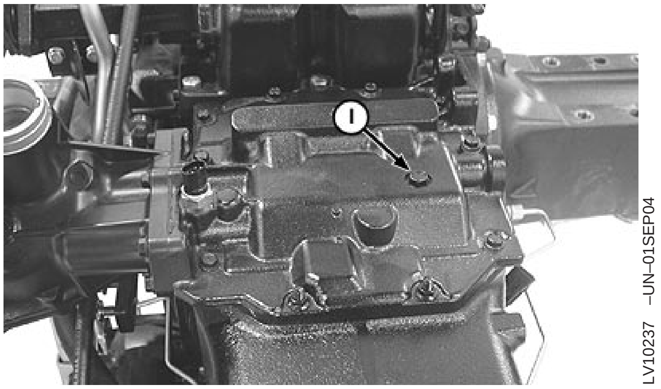
21. Install right-side rear wheel and tighten cap screws to specification.

Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque... 600 N•m (442 lb-ft)

22. Bleed brakes. (See Reference 260-15-009, Bleed Rear Brakes in TM2197 Section 260, Group 15.)

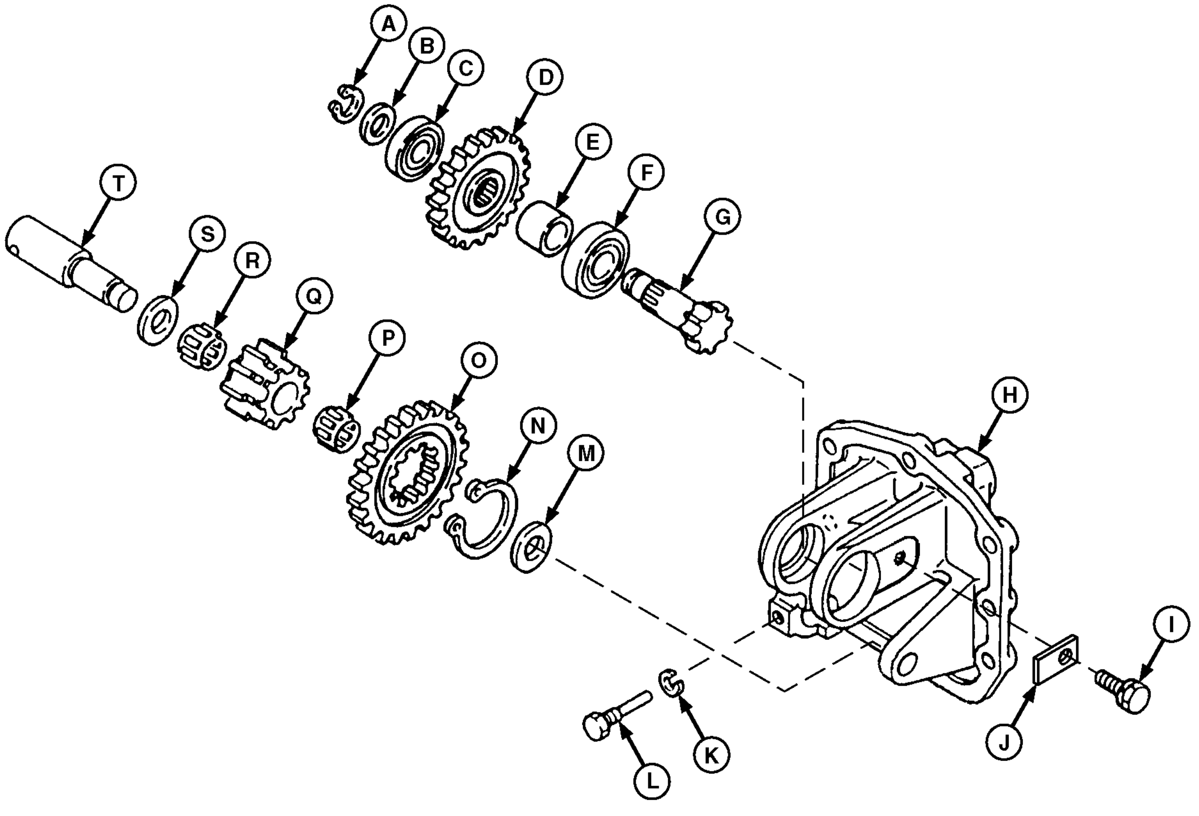




A—Cap Screw (3 used)
B—Clamp (3 used)
C—Filter Assembly
D—Supply Brake Line
E—Shoulder Bolt
F—Differential Lock Lever
G—Cap Screw (6 used)
H—Creeper Assembly
I—Stop Screw

OUO6046,000C35E –19–26AUG04–2/2

Disassemble, Inspect, and Assemble Creeper Assembly



A—Snap Ring
B—Washer
C—Bearing
D—Drive Gear
E—Spacer
F—Bearing
G—Shaft
H—Housing
I—Cap Screw
J—Plate
K—Lock Washer
L—Screw
M—Washer
N—Snap Ring
O—Gear
P—Needle Bearing
Q—Gear
R—Gear
S—Washer
T—Shaft

NOTE: Bearings (C and F) are press fit on shaft (G).

1. Remove snap ring (A) and washer (B).
2. Remove shaft (G) using a brass drift and hammer on end of shaft that snap ring was removed from.
3. Remove parts (C—E), (I—J) and (F).
4. Remove screw (L) and lock washer (K). Remove shaft (T).
5. Remove parts (M—S).
6. Remove snap ring (N) and remove gear (O) from gear (Q).
7. Inspect all parts for wear or damage. Replace as necessary.
8. Lubricate all parts with clean transmission/hydraulic oil during assembly.
9. Assemble all parts.

OUO6046,000C35F –19–26AUG04–1/1

Section 60

Steering and Brake Repair

Contents

Page

Group 05—Steering Repair
Other Material 60-05-1
Specifications 60-05-2
Service Parts Kits 60-05-3
Remove and Install Straight Steering Column and Valve 60-05-4
Remove and Install Tilt/Telescoping Steering Column 60-05-6
Remove and Install Steering Valve—Tilt/Telescoping Steering Column . . .60-05-8
Disassemble and Inspect Steering Valve. 60-05-9
Assemble Steering Valve 60-05-15
Remove and Install Steering Cylinder—2WD Axle 60-05-20
Disassemble, Inspect, and Assemble Steering Cylinder—2WD Axle 60-05-22
Remove and Install Steering Cylinder—MFWD Axle 60-05-23
Remove, Inspect and Install Tie Rod Assembly—2WD Axle 60-05-25
Disassemble, Inspect, and Assemble Steering Cylinder—MFWD Axle—Use CTM4870. 60-05-26
Remove, Inspect and Install Tie Rod Assembly—MFWD Axle. 60-05-27
Inspect and Replace Steering Hydraulic Lines—Straddle Mount (Without Oil Cooler). 60-05-28
Inspect and Replace Steering Hydraulic Lines—Straddle Mount (With Oil Cooler) . . .60-05-30
Inspect and Replace Steering Hydraulic Lines—Isolated Open Operator Station and Cab Tractors (Without Oil Cooler). 60-05-32
Inspect and Replace Steering Hydraulic Lines—Isolated Open Operator Station and Cab Tractors (With Oil Cooler) 60-05-34

Group 10—Brake Repair
Service Equipment and Tools 60-10-1
Other Material 60-10-1
Specifications 60-10-2
Remove and Install Brake Valve and Pedals. . .60-10-3
Disassemble and Inspect Brake Pedals and Valve 60-10-5
Brake Valve Cross Section 60-10-8
Assemble Brake Valve 60-10-9

Page

Remove and Inspect Brakes 60-10-12
Install Brakes 60-10-15
Inspect and Replace Brake Hydraulic Lines 60-10-18

Steering Repair

Other Material

Number	Name	Use
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to steering cylinder-to-axle cap screws (2WD axle).
TY6333 (U.S.) CXTY6333 (Canadian)	Moly High Temperature EP Grease	Apply to mating surfaces of steering cylinder and differential case (MFWD axle) and to tie rod sleeves (2WD axle).

LOCTITE is a trademark of Loctite Corp.

JG31785,000007E –19–02SEP04–1/1

Specifications

Item	**Measurement**	**Specification**
Straight Steering Column Mounting Cap Screw	Torque	50 N•m (37 lb-ft)
Steering Wheel Nut—Straight Column	Torque	30 N•m (22 lb-ft)
Steering Column Mounting Cap Screw—Tilt/Telescoping Column	Torque	50 N•m (37 lb-ft)
Steering Wheel Nut—Tilt/Telescoping Column	Torque	30 N•m (22 lb-ft)
Steering Valve Mounting Cap Screw—Telescoping Column	Torque	30 N•m (22 lb-ft)
Steering Valve Cover Cap Screws	Torque	30 N•m (22 lb-ft)
Steering Cylinder Cap Screws—2WD Axle	Torque	200 N•m (147 lb-ft)
Steering Cylinder Mounting Clamp—MFWD Axle	Torque	70 N•m (52 lb-ft)
Ball Joint—2WD Axle	Torque	300 N•m (221 lb-ft)
Tie Rod Sleeve Cap Screws—2WD Axle	Torque	90 N•m (66 lb-ft)
Tie Rod End Lock Nut—2WD Axle	Torque	165 N•m (122 lb-ft)
Ball Joint to Piston Rod—MFWD Axle	Torque	300 N•m (221 lb-ft)
Ball Joint Nut—MFWD Axle	Torque	120 N•m (89 lb-ft)
Tie Rod End Lock Nut—MFWD Axle	Torque	165 N•m (122 lb-ft)

JG31785,000009A –19–20SEP04–1/1

Service Parts Kits

The following kits are available through your parts catalog:

Steering Valve Seal Kit

Steering Cylinder Seal Kit

JG31785,0000083 –19–13SEP04–1/1

Remove and Install Straight Steering Column and Valve

1. Remove steering wheel.

2. Remove cowl. (See Remove and Install Cowl Cover in Section 90, Group 06.)

NOTE: Close all openings using caps and plugs.

3. Disconnect hydraulic hoses (A).

4. Disconnect hydraulic lines (B).

IMPORTANT: Support steering valve before removing mounting cap screws. When cap screws are removed, steering column and valve are separated.

5. Remove cap screws (C).

NOTE: Steering column is not serviceable.

6. Inspect steering column for wear or damage. Replace as needed.

7. Inspect steering valve, replace as needed. (See Disassemble and Inspect Steering Valve in Section 60, Group 05.)

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

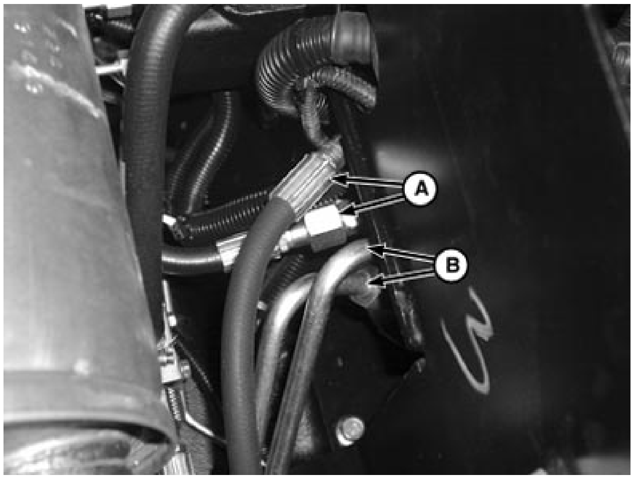
8. Install steering valve, steering column, and cap screws (C). Tighten to specification.

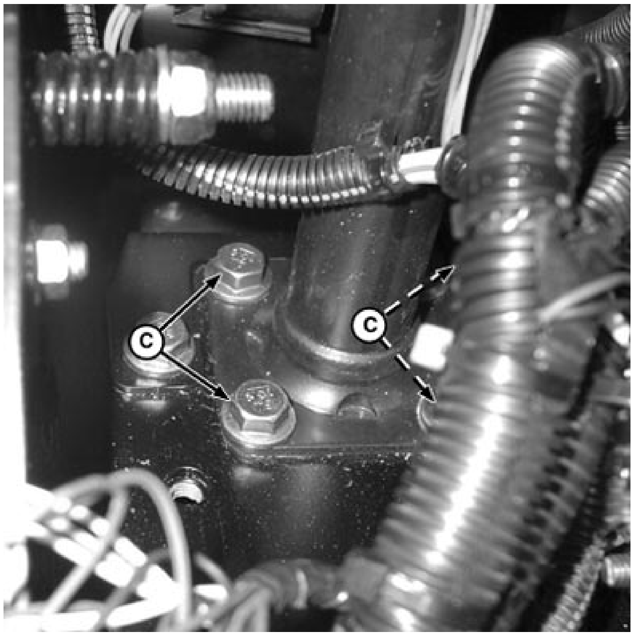
Specification	
Straight Steering Column Mounting Cap Screw—Torque	50 N•m (37 lb-ft)

9. Connect hydraulic lines (B).

10. Connect hydraulic hoses (A).

11. Install steering wheel. Tighten steering wheel nut to specification.





A—Hydraulic Hose (2 used)
B—Hydraulic Line (2 used)
C—Cap Screw (4 used)

Continued on next page

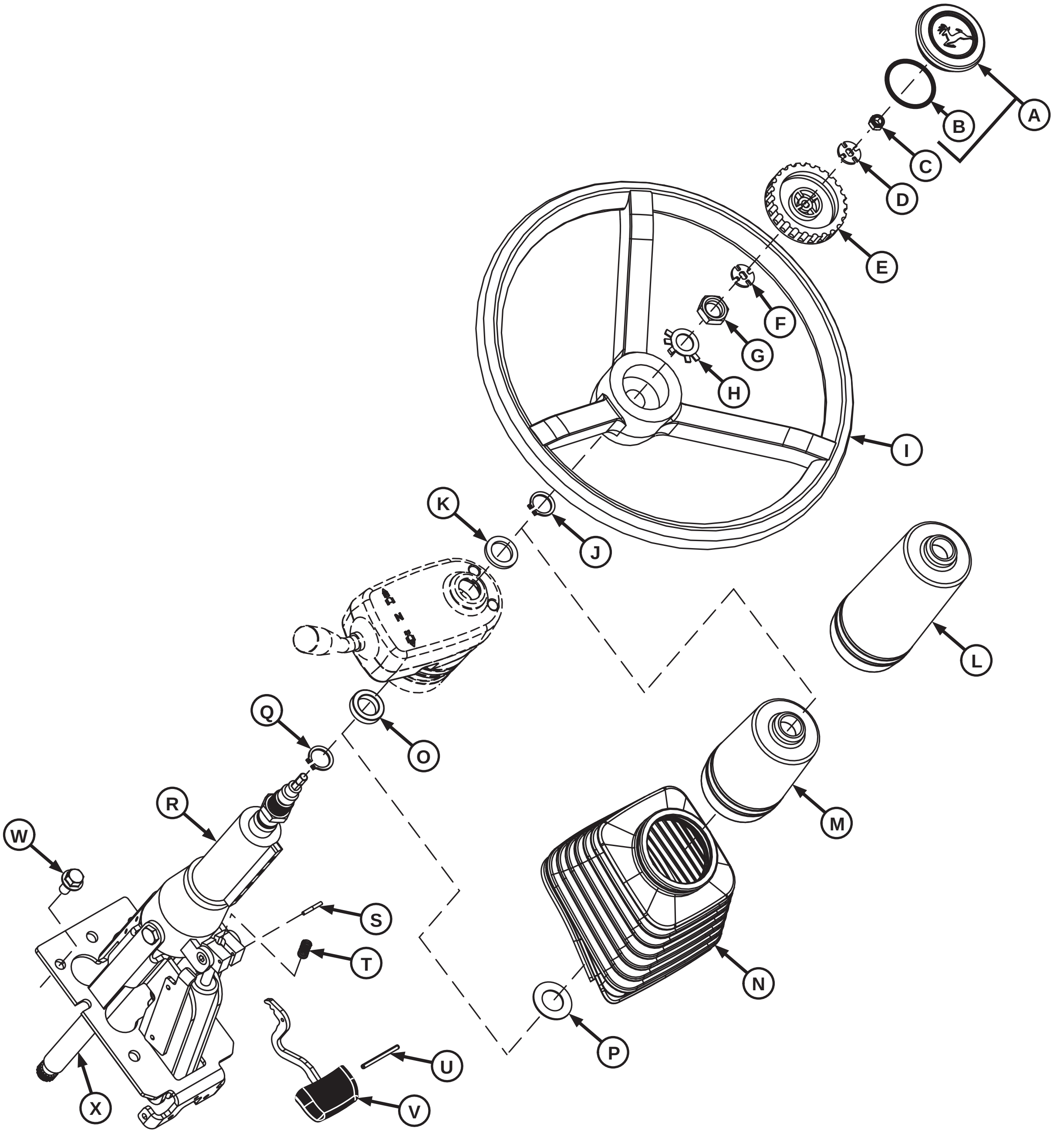
Specification

Steering Wheel Nut—Straight Column—Torque	30 N•m (22 lb-ft)

12. Install cowl. (See Remove and Install Cowl Cover in Section 90, Group 06.)

JG31785,0000084 –19–13SEP04–2/2

Remove and Install Tilt/Telescoping Steering Column



LV10599 –UN–07OCT04

A—Cover	**E—Knob**	**L—Cap (SYNCSHUTTLE™)**	**S—Roll Pin**
B—O-Ring	**F—Washer**	**M—Cap (POWRREVERSER™)**	**T—Spring**
C—Lock Nut	**G—Nut**	**N—Boot**	**U—Roll Pin**
D—Washer	**H—Lock Washer**	**O—Bushing**	**V—Tilt Lever**
	I—Steering Wheel	**P—Washer**	**W—Cap Screw (4 used)**
	J—Snap Ring	**Q—Snap Ring**	**X—Conduit**
	K—Washer	**R—Steering Column**	

SYNCSHUTTLE is a trademark of Deere & Company
POWRREVERSER is a trademark of Deere & Company

Continued on next page

1. Remove items (A—I).
2. Remove cowl. (See Remove and Install Cowl Cover in Section 90, Group 06.)
3. Remove snap ring (J) and washer (K).
4. Remove items (L—P).
5. Remove snap ring (Q).
6. Remove roll pins (S and U), spring (T), and tilt lever (V).
7. Remove cap screws (W), steering column (R), and conduit (X).

NOTE: Steering column is non-serviceable.

8. Inspect all components for wear or damage. Replace as necessary.
9. Install conduit (X), steering column (R), and cap screws (W). Tighten to specification.

Specification

Steering Column Mounting Cap Screw—Tilt/Telescoping Column—Torque.. 50 N•m (37 lb-ft)

10. Install tilt lever (V), spring (T), and roll pins (S and U).
11. Install snap ring (Q).
12. Install items (P—L).
13. Install washer (K) and snap ring (J).
14. Install cowl. (See Remove and Install Cowl Cover in Section 90, Group 06.)
15. Install items (A—I). Tighten nut (G) to specification.

Specification

Steering Wheel Nut—Tilt/Telescoping Column—Torque... 30 N•m (22 lb-ft)

JG31785,0000085 –19–13SEP04–2/2

Remove and Install Steering Valve—Tilt/Telescoping Steering Column

NOTE: Mark hydraulic hoses to aid in installation. Close all openings with caps and plugs.

1. Disconnect hydraulic hoses from steering valve.

2. Remove cowl cover. (See Remove and Install Cowl Cover in section 90, group 06)

NOTE: Some models may require removal of exhaust pipe.

3. Remove four cap screws (A) and washers (B and C). Remove steering valve through left side of tractor.

4. Remove four rubber isolators (D) from engine side of mounting surface.

5. Repair or replace steering valve as required. (See Disassemble and Inspect Steering Valve in Section 60, Group 05.)

6. Install isolators (D) from engine side of mounting surface. Place one large washer (C) over each isolator from operator's side.

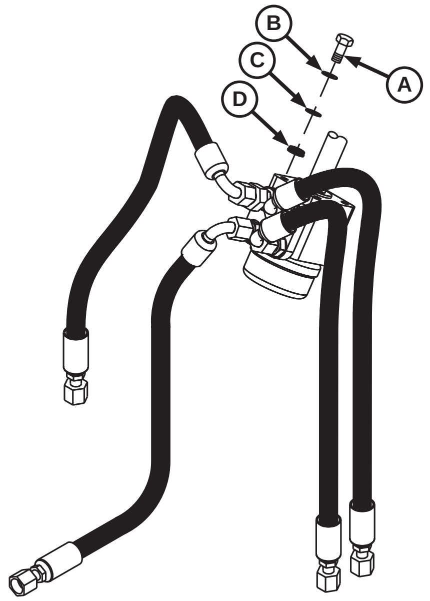
7. Install valve using cap screws (A) and small washers (B). Tighten cap screws to specification.

Specification

Steering Valve Mounting Cap Screw—Tilt/Telescoping Column—Torque .... 30 N•m (22 lb-ft)

8. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

9. Connect hydraulic hoses at steering valve.



LV10546 –UN–20SEP04

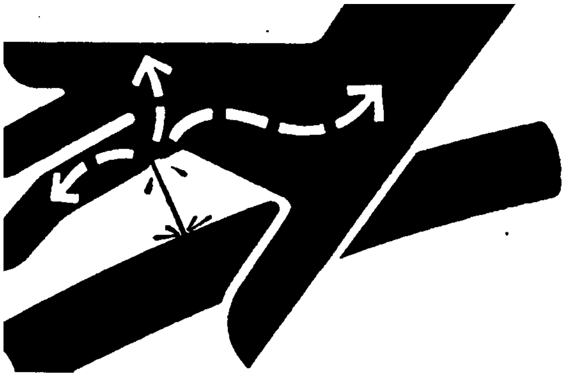
A—Cap Screw (4 used)
B—Washer, Small (4 used)
C—Washer, Large (4 used)
D—Rubber Isolator (4 used)

Continued on next page

JG31785,0000086 –19–13SEP04–1/2

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 –UN–23AUG88

10. Start engine. Operate steering and check for hydraulic leaks.

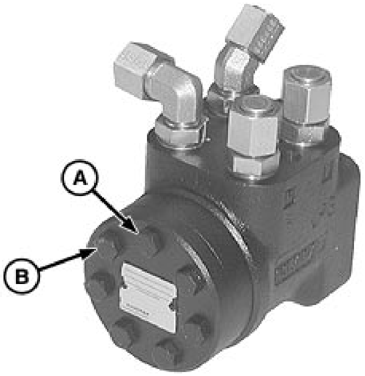
JG31785,0000086 –19–13SEP04–2/2

Disassemble and Inspect Steering Valve

NOTE: Mark location of spacer cap screw (B) to aid in assembly.

1. Remove six cap screws (A) and remove spacer cap screw (B).

A—Cap Screw (6 used)
B—Spacer Cap Screw



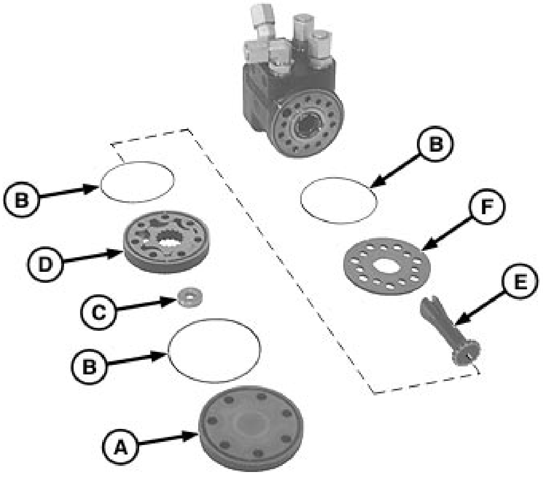
LV10511 –UN–14SEP04

Continued on next page

JG31785,0000087 –19–13SEP04–1/8

2. Remove parts (A—F).

A—Cover
B—O-Ring (3 used)
C—Spacer
D—Rotor Gear Set
E—Drive Shaft
F—Stop Disk

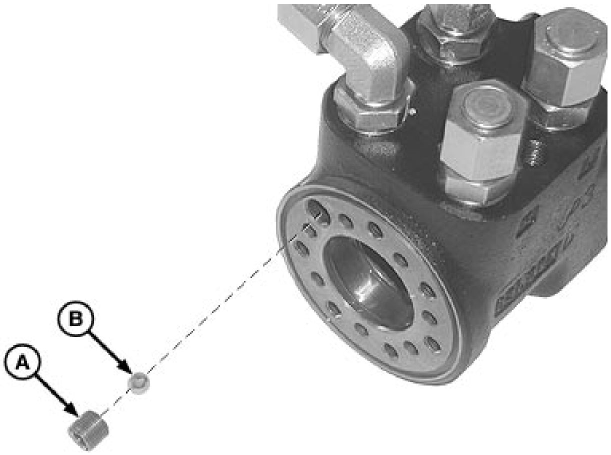


LV10515 –UN–14SEP04

JG31785,0000087 –19–13SEP04–2/8

3. Remove ring nut (A) and ball (B).

A—Ring Nut
B—Ball



LV10514 –UN–14SEP04

Continued on next page

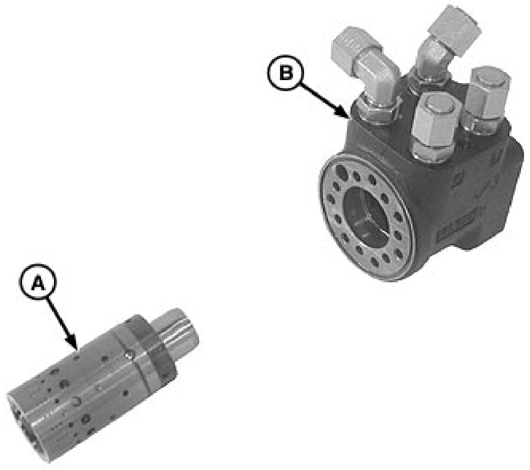
JG31785,0000087 –19–13SEP04–3/8

IMPORTANT: If spool and sleeve assembly must be removed from valve body for cleaning, handle parts with care. Tolerances on these parts are very close.

Use care so as not to drop or lose parts when removing sleeve and spool assembly.

4. Remove spool valve (A) from steering valve housing (B).

A—Spool Valve
B—Housing



LV10512 –UN–14SEP04

JG31785,0000087 –19–13SEP04–4/8

NOTE: Needle bearing (D) and bearing races (C) may remain in housing after removal of spool valve.

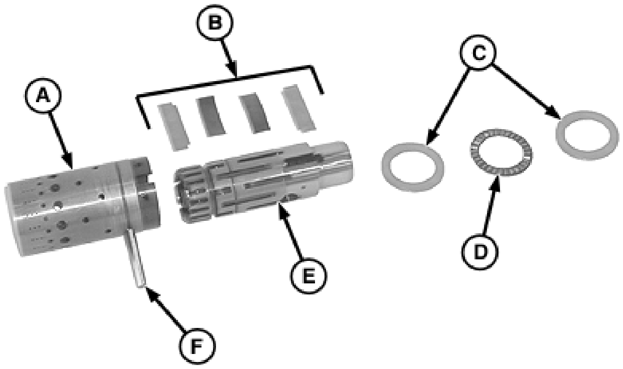
5. Remove needle roller (F).

6. Carefully slide control spool (E) from spool sleeve (A).

NOTE: Spring set consists of two flat and two curved leaves.

7. Push spring set (B) from control spool (E).

A—Spool Sleeve
B—Spring Set
C—Bearing Races
D—Needle Bearing
E—Control Spool
F—Needle Roller



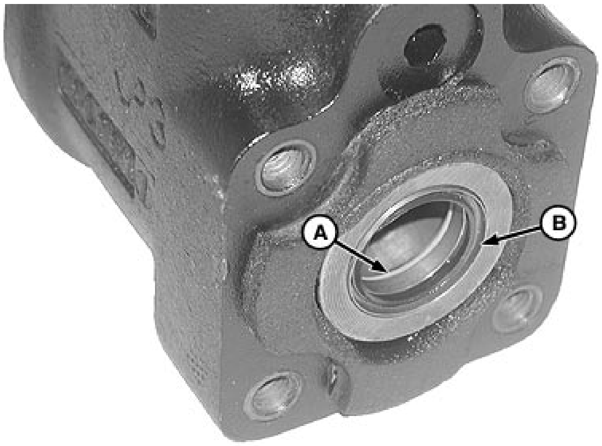
LV10516 –UN–14SEP04

Continued on next page

JG31785,0000087 –19–13SEP04–5/8

8. Remove seal (A) and dust seal (B).

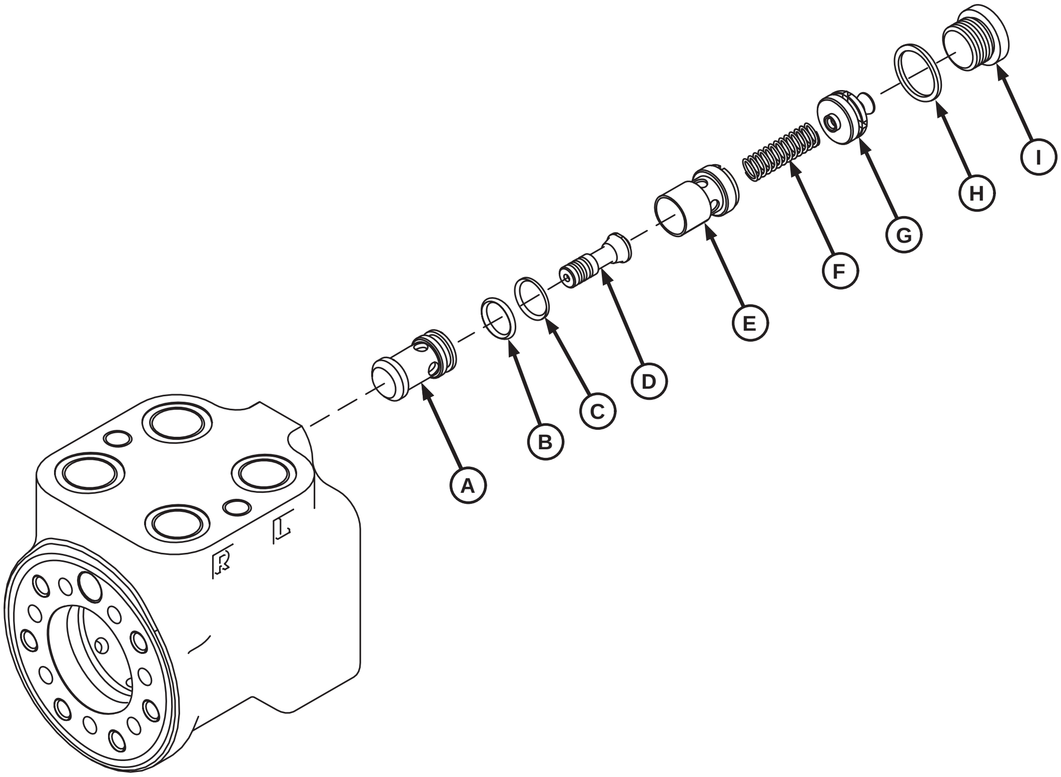
A—Seal
B—Dust Seal



LV10510 –UN–14SEP04

Continued on next page

JG31785,0000087 –19–13SEP04–6/8



A—Valve Body
B—O-Ring
C—Backing Ring
D—Control Spool
E—Spacer Sleeve
F—Spring
G—Locking Screw
H—Seal Ring
I—Plug

IMPORTANT: Relief valve seat in valve body is not serviceable. Valve body, spool, and sleeve must be replaced as a set if relief valve seat is damaged.

9. Remove parts (A—I) to inspect relief valve.

Continued on next page

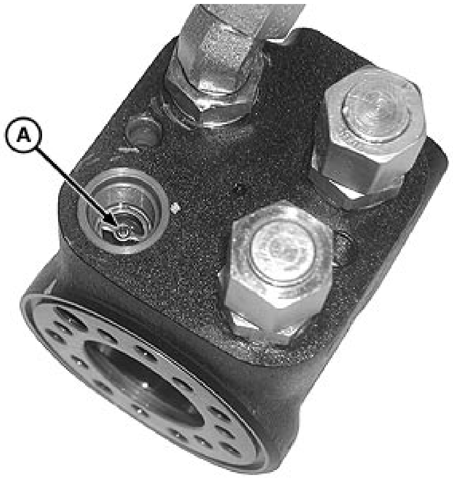
JG31785,0000087 –19–13SEP04–7/8

10. Remove hydraulic fitting from inlet port to inspect check valve (A). Remove any obstructions from check valve.

11. Install and tighten hydraulic fitting.

12. Inspect all parts for scoring, wear, or damage. Replace as necessary.

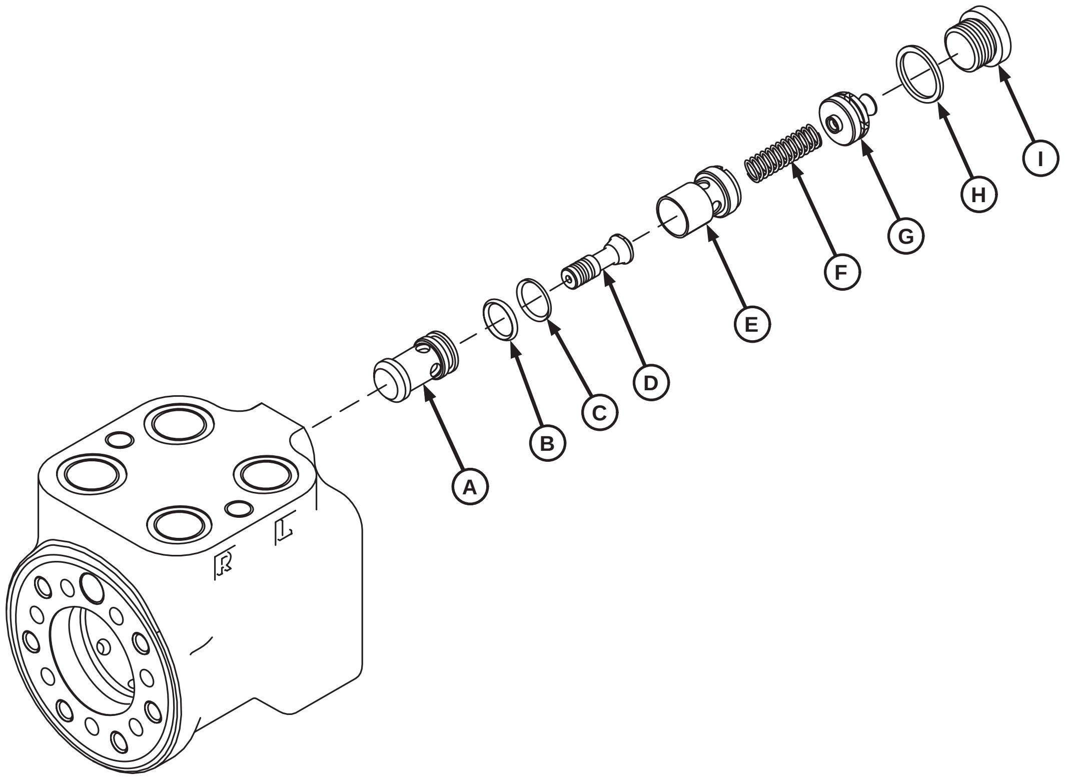
A—Check Valve



LV10513 –UN–14SEP04

JG31785,0000087 –19–13SEP04–8/8

Assemble Steering Valve



A—Valve Body
B—O-Ring
C—Backing Ring
D—Control Spool
E—Spacer Sleeve
F—Spring
G—Locking Screw
H—Seal Ring
I—Plug

IMPORTANT: Always replace all O-rings and seals. Damaged or used parts will leak.

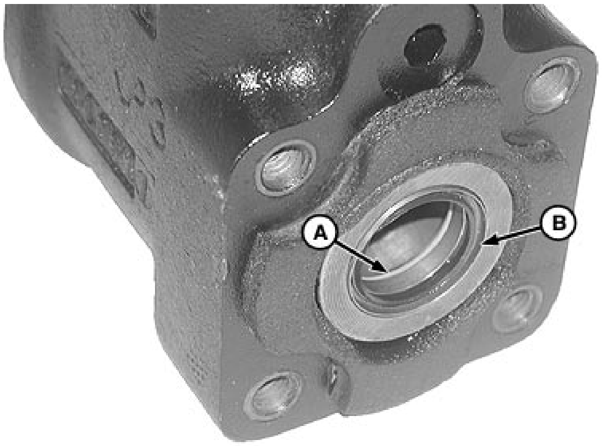
NOTE: Apply clean transmission/hydraulic oil to all internal parts.

1. Install parts (A—I). Turn locking screw (G) the same number of turns in, as needed to remove.

Continued on next page JG31785,0000094 –19–14SEP04–1/7

2. Install seal (A) and dust seal (B).

A—Seal
B—Dust Seal

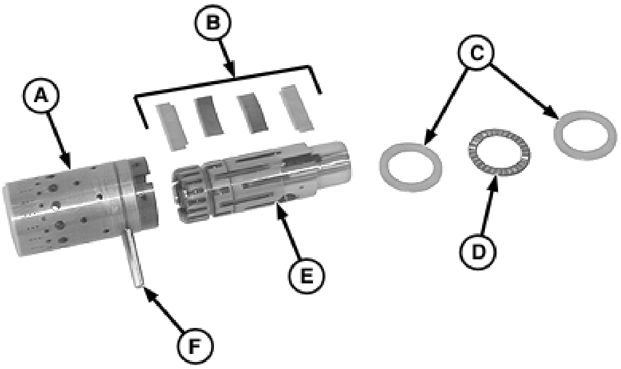


LV10510 –UN–14SEP04

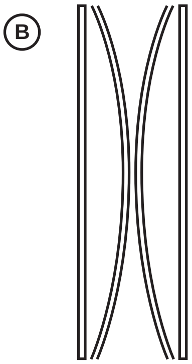
JG31785,0000094 –19–14SEP04–2/7

3. Install two flat leaves of spring set (B) in slot of control spool (E). Install curved leaves so their centers touch, between the flat leaves.
4. Slide spool and springs into sleeve (A). Squeeze spring ends together so springs fit into slot of sleeve. Make sure leaf ends are aligned and centered.
5. Install needle roller (F).
6. Install parts (C and D).

A—Spool Sleeve
B—Spring Set
C—Bearing Races
D—Needle Bearing
E—Control Spool
F—Needle Roller



LV10516 –UN–14SEP04



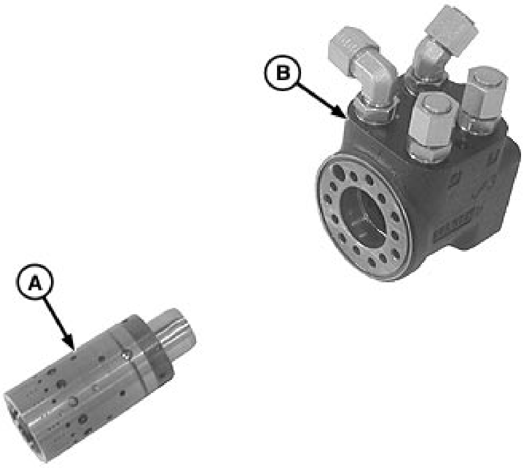
LV10549 –UN–05OCT04

Continued on next page

JG31785,0000094 –19–14SEP04–3/7

7. Slide spool valve assembly (A) in housing (B).

A—Spool Valve
B—Housing

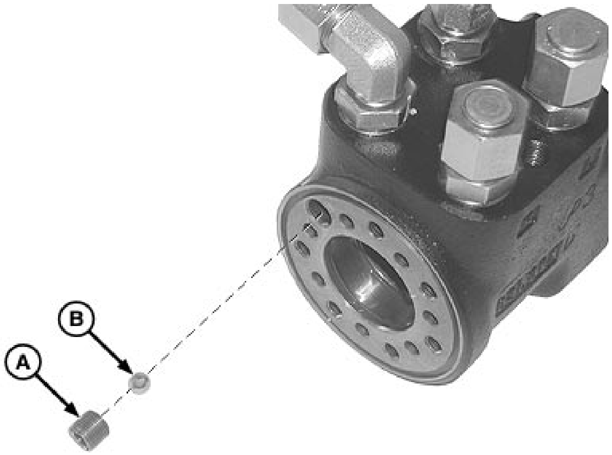


LV10512 –UN–14SEP04

JG31785,0000094 –19–14SEP04–4/7

8. Install ball (B) and ring nut (A).

A—Ring Nut
B—Ball



LV10514 –UN–14SEP04

Continued on next page

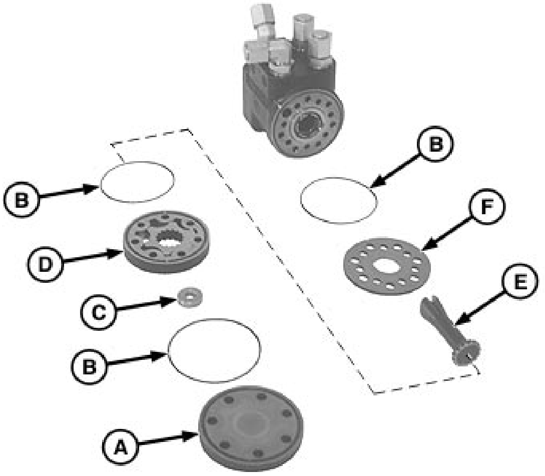
JG31785,0000094 –19–14SEP04–5/7

9. Install parts (B—F).

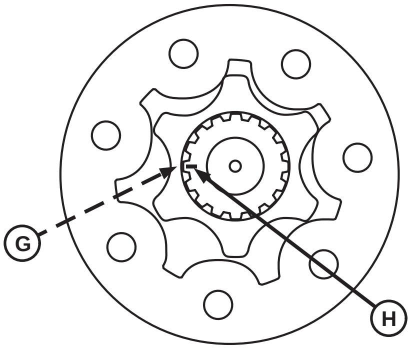
IMPORTANT: Violent steering wheel oscillation can occur if rotor gear and drive shaft are not timed correctly.

10. Align timing mark (H) on face of drive shaft with timing notch (G) inside splines of rotor gear.

11. Install cover (A).



LV10515 –UN–14SEP04



LV11244 –UN–13OCT04

A—Cover
B—O-Ring
C—Spacer
D—Rotor Gear Set
E—Drive Shaft
F—Stop Disk
G—Timing Notch
H—Timing Mark

Continued on next page

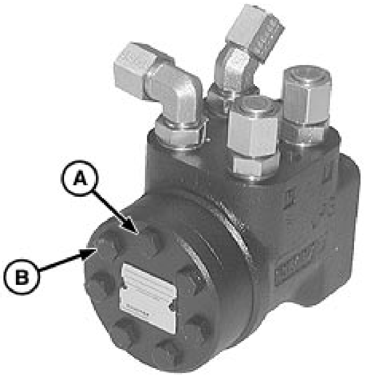
JG31785,0000094 –19–14SEP04–6/7

12. Install cap screws (A) and spacer cap screw (B) in location shown. Tighten all cap screws to specification in sequence shown.

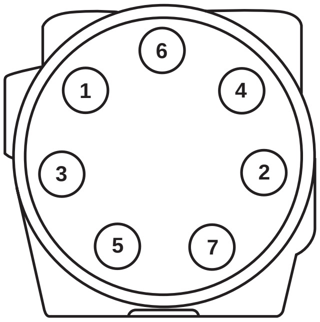
Specification

Steering Valve Cover Cap Screws—Torque	30 N•m (22 lb-ft)

A—Cap Screws (6 used)
B—Spacer Cap Screw



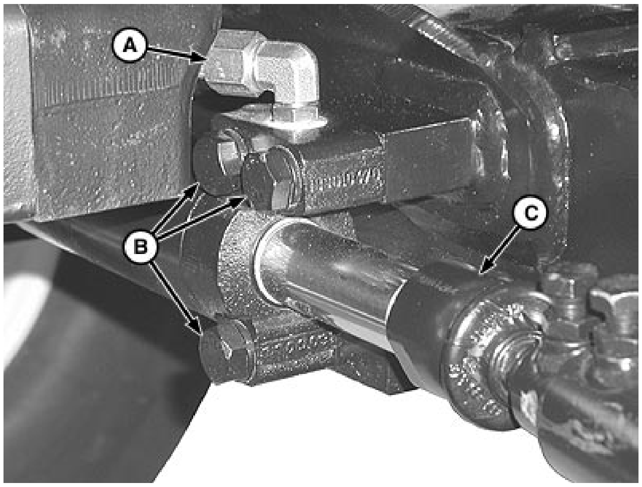
LV10511 –UN–14SEP04



LV10548 –UN–20SEP04

JG31785,0000094 –19–14SEP04–7/7

Remove and Install Steering Cylinder—2WD Axle



A—Hydraulic Hose
B—Cap Screw (3 used)
C—Tie Rod End

1. Remove tie rod ends (C). (See Remove, Inspect and Install Tie Rod Assembly—2WD Axle in Section 60, Group 05.)

2. Disconnect hydraulic hoses (A). Close all openings using caps and plugs.

3. Remove cap screws (B) from both ends of cylinder. Remove cylinder.

4. Make repairs as necessary. (See Disassemble, Inspect, and Assemble Steering Cylinder—2WD Axle in Section 60, Group 05.)

5. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws.

6. Install steering cylinder and cap screws (B). Tighten cap screws to specification.

Specification

Steering Cylinder Cap Screws—
2WD Axle—Torque.. 200 N•m (147 lb-ft)

IMPORTANT: Always replace all O-rings. Damaged or used O-rings will leak.

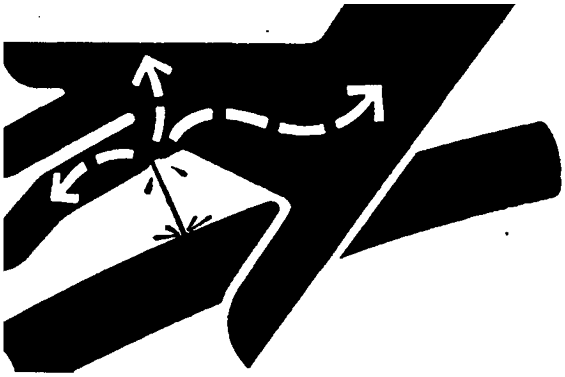
7. Install new O-rings and connect hydraulic hoses (A).

8. Install tie rod ends (C).

Continued on next page

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



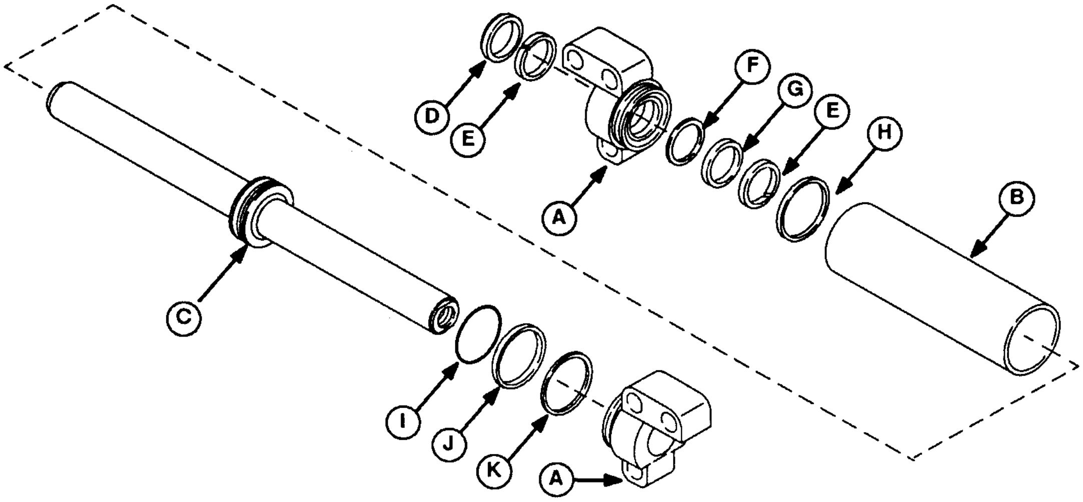
X9811 –UN–23AUG88

9. Start engine. Operate steering and check for hydraulic leaks.

10. Perform toe-in adjustment. (See Reference 260-15-005, Adjusting Toe-In-Adjustable Front Axle in TM2197 Section 260, Group 15.)

JG31785,000008A –19–13SEP04–2/2

Disassemble, Inspect, and Assemble Steering Cylinder—2WD Axle



LV002AE –UN–09MAR92

A—Rod Guide (2 used)
B—Cylinder Barrel
C—Rod and Piston Assembly
D—Wiper Seal (2 used)
E—Split Wear Ring (4 used)
F—Backup Ring (2 used)
G—Seal (2 used)
H—Ring Seal (2 used)
I—O-Ring
J—Split Wear Ring
K—Piston Seal

NOTE: Ball joints must be removed from steering cylinder rod for cylinder disassembly.

1. Remove steering cylinder. (See Remove and Install Steering Cylinder—2WD Axle in Section 60, Group 05.)

2. Pull rod guides (A) from cylinder barrel (B) and remove from rod and piston assembly (C).

3. Pull rod and piston assembly from barrel.

4. Remove two wear rings (E), seal (G), backup ring (F), wiper seal (D), and ring seal (H) from each guide.

5. Remove piston seal (K), wear ring (J), and O-ring (I).

6. Inspect rod and barrel for scoring, wear, or damage. Replace cylinder if necessary.

7. Install new seals and wear rings.

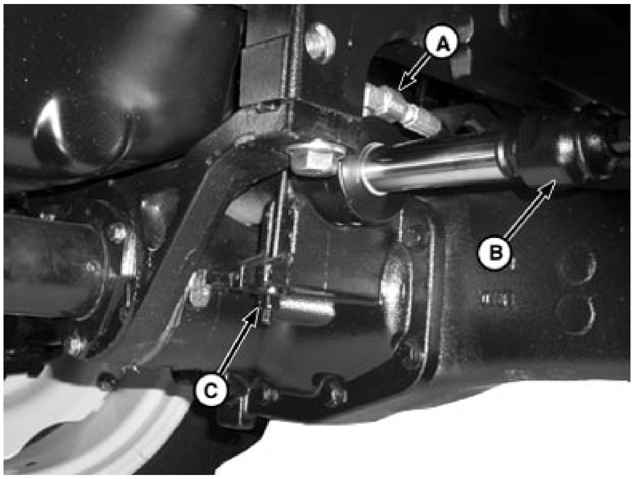
8. Apply clean transmission/hydraulic oil to all internal parts during assembly.

9. Install rod and piston assembly into barrel.

10. Carefully install rod guides on rod and in barrel so as not to damage seals.

JG31785,000008B –19–13SEP04–1/1

Remove and Install Steering Cylinder—MFWD Axle



LV10569 –UN–17SEP04

A—Hydraulic Hose
B—Tie Rod End
C—Clamp

1. Remove tie rod ends (B). (See Remove, Inspect and Install Tie Rod Assembly—MFWD Axle in Section 60, Group 05.)

2. Disconnect hydraulic hose (A) from both sides. Close all openings using caps and plugs.

3. Remove clamp (C) from both sides.

4. Remove steering cylinder assembly.

5. Make repairs as necessary. (See Disassemble, Inspect, and Assemble Steering Cylinder—MFWD Axle—Use CTM4870 in Section 60, Group 05.)

6. Install the steering cylinder assembly.

7. Apply Thread Lock and Sealer (Medium Strength) to threads of mounting clamp. Tighten to specification.

Specification	
Steering Cylinder Mounting Clamp—MFWD Axle—Torque	70 N•m (52 lb-ft)

8. Install new tie rod ends.

IMPORTANT: Always replace all O-rings. Damaged or used O-rings will leak.

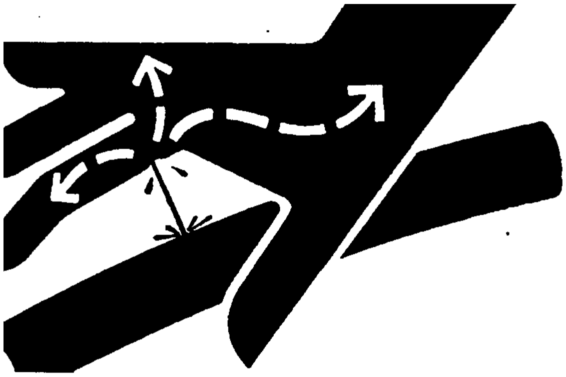
9. Install new O-rings and connect hydraulic hoses.

Continued on next page

JG31785,000008C –19–13SEP04–1/2

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

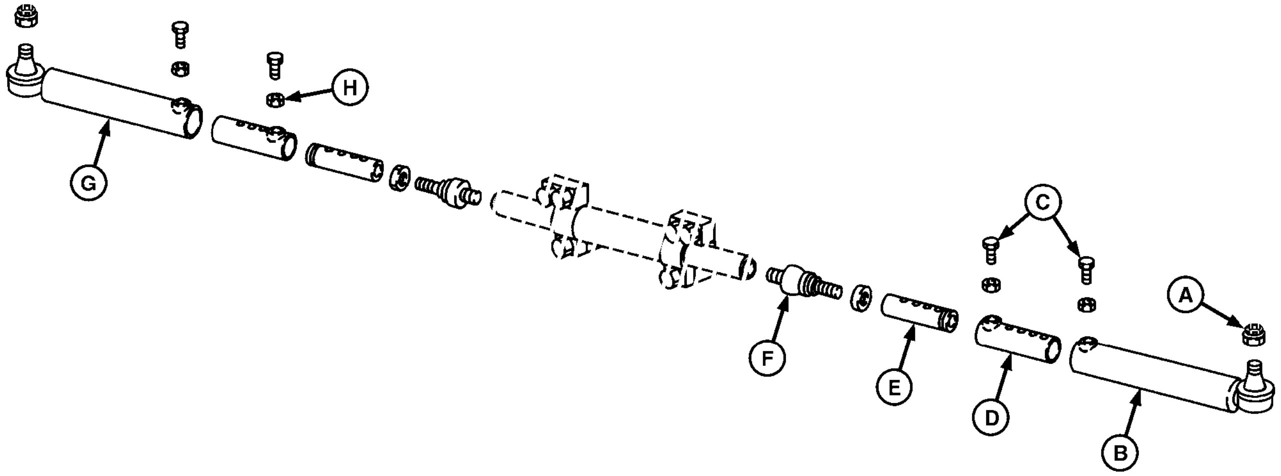


X9811 –UN–23AUG88

10. Start engine. Operate steering and check for hydraulic leaks.

JG31785,000008C –19–13SEP04–2/2

Remove, Inspect and Install Tie Rod Assembly—2WD Axle



LV10598 –UN–07OCT04

A—Lock Nut (2 used)
B—Right Tie Rod End
C—Cap Screw (4 used)
D—Inner Sleeve (2 used)
E—Rod (2 used)
F—Ball Joint (2 used)
G—Left Tie Rod End
H—Nut (4 used)

NOTE: Tie rod is a tapered bore fit. Use a ball joint fork or puller to ease removal.

1. Remove lock nut (A). Remove tie rod end from spindle arm.

NOTE: To replace ball joint (F), use a standard 46 mm wrench on flats on both ball joints. Turn one side while holding the other.

2. Remove parts (B—F) as necessary for replacement.

3. Inspect all parts for wear or damage.

4. Apply a small amount of Moly High Temperature EP Grease to outer surface of rod (E) and sleeve (D).

5. Install parts (B—F). Tighten ball joint (F) to specification.

Specification	
Ball Joint—2WD Axle—Torque	300 N•m (221 lb-ft)

6. Adjust length of tie rod assembly by positioning sleeve (D) and rod (E) so wheel is approximately straight forward when steering cylinder is centered and tie rod end fits into arm of spindle. Tighten cap screws and nuts (C) to specification.

Specification	
Tie Rod Sleeve Cap Screws—2WD Axle—Torque	90 N•m (66 lb-ft)

7. Install and tighten lock nut (A) to specification.

Specification	
Tie Rod End Lock Nut—2WD Axle—Torque	165 N•m (122 lb-ft)

8. Repeat procedure for opposite tie rod assembly if required.

Continued on next page

JG31785,000008D –19–14SEP04–1/2

9. Adjust front axle toe-in. (See Reference 260-15-005, Adjusting Toe-In—Adjustable Front Axle in TM2197 Section 260, Group 15.)

JG31785,000008D –19–14SEP04–2/2

Disassemble, Inspect, and Assemble Steering Cylinder—MFWD Axle—Use CTM4870

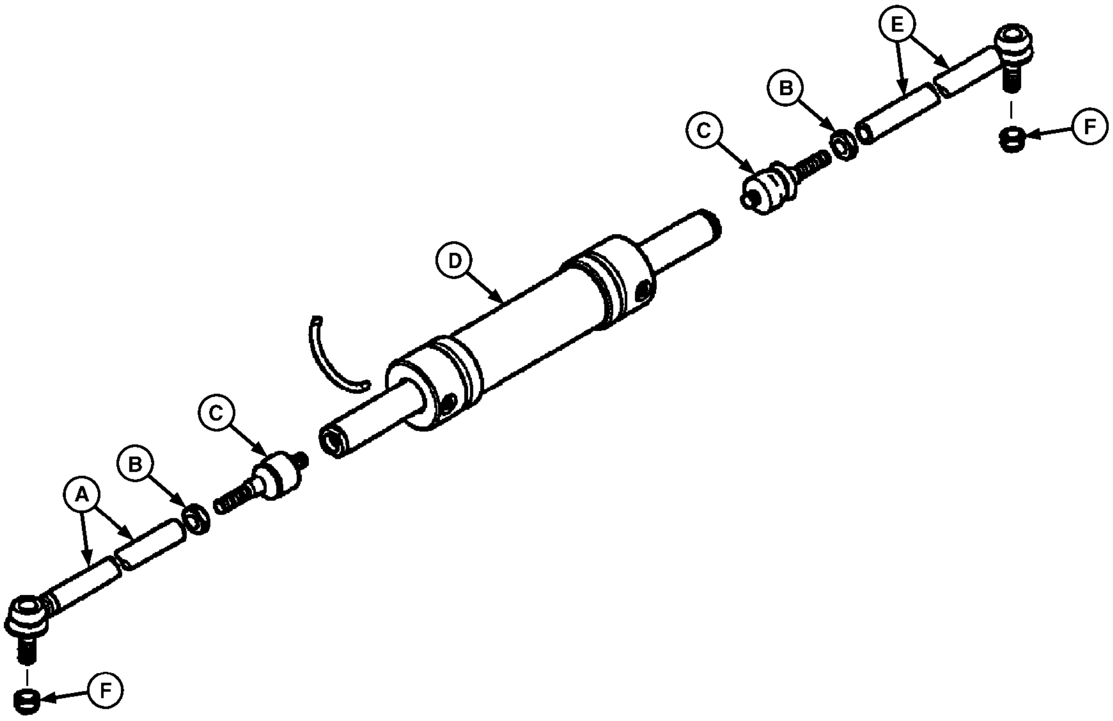
For complete repair information the component technical manual (CTM) is also required. Use the component technical manual in conjunction with this machine manual.

COMPONENT
TECHNICAL
MANUAL

TS225 –UN–17JAN89

JG31785,00000D0 –19–11OCT04–1/1

Remove, Inspect and Install Tie Rod Assembly—MFWD Axle



A—Left Tie Rod End
B—Nut (2 used)
C—Ball Joint (2 used)
D—Steering Cylinder
E—Right Tie Rod End
F—Lock Nut (2 used)

NOTE: Tie rod is a tapered bore fit. Use a ball joint fork or puller to ease removal.

1. Remove lock nut (F). Remove tie rod from spindle arm.

2. Inspect all parts for wear or damage.

NOTE: To remove ball joint (C), place wrench on flats of both ball joints. Turn one side while holding the other.

3. Remove parts (A—C) and right tie rod end (E) as necessary for replacement.

4. Install parts (A—C) and right tie rod end (E). Tighten ball joints (C) to specification.

Specification	
Ball Joint to Piston Rod—MFWD Axle—Torque	300 N•m (221 lb-ft)

5. Adjust length of tie rod assembly by turning tie rod end (A or E) so wheel is approximately straight forward when steering cylinder (D) is centered and tie rod end fits into arm spindle. Tighten nut (B) to specification.

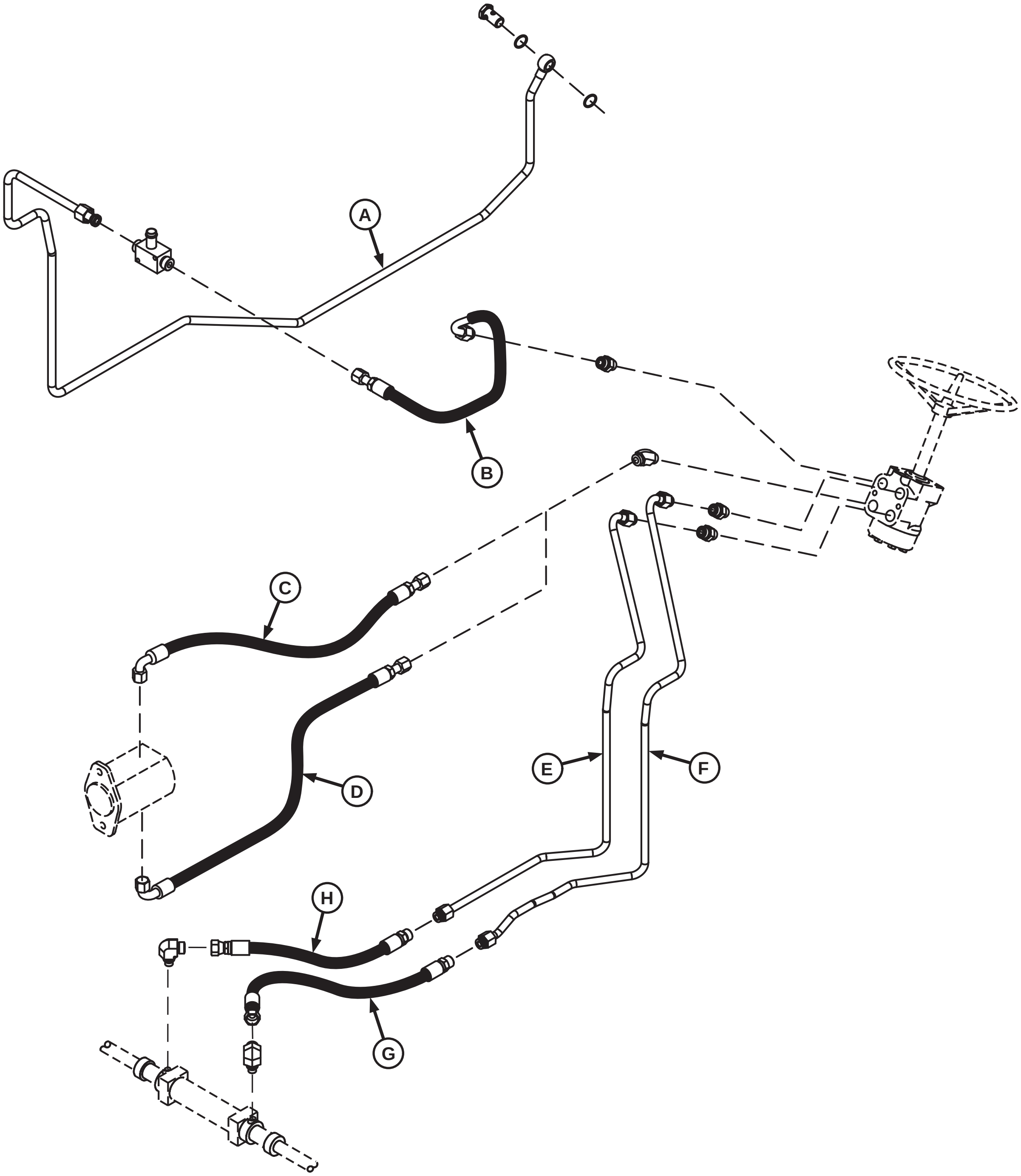
Specification	
Ball Joint Nut—MFWD Axle—Torque	120 N•m (89 lb-ft)

6. Install and tighten lock nut (F) to specification.

Specification	
Tie Rod End Lock Nut—MFWD Axle—Torque	165 N•m (122 lb-ft)

7. Adjust front axle toe-in. (See Reference 260-15-007, Adjusting Toe-In-MFWD Axle in TM2197 Section 260, Group 15.)

Inspect and Replace Steering Hydraulic Lines—Straddle Mount (Without Oil Cooler)



LV10677 –UN–01OCT04

Continued on next page

A—Return Line-to-Transmission
B—Steering Valve-to-Transmission Return Line Hose
C—Hydraulic Pump-to-Steering Valve Supply Hose (4-Cylinder Engine)
D—Hydraulic Pump-to-Steering Valve Supply Hose (5-Cylinder Engine)
E—Right Steering Line
F—Left Steering Line
G—Left Steering Hose-to-Steering Cylinder
H—Right Steering Hose-to-Steering Cylinder

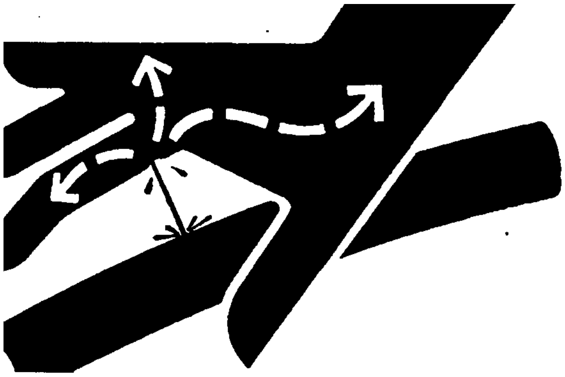
IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

1. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

JG31785,0000090 –19–14SEP04–2/3

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

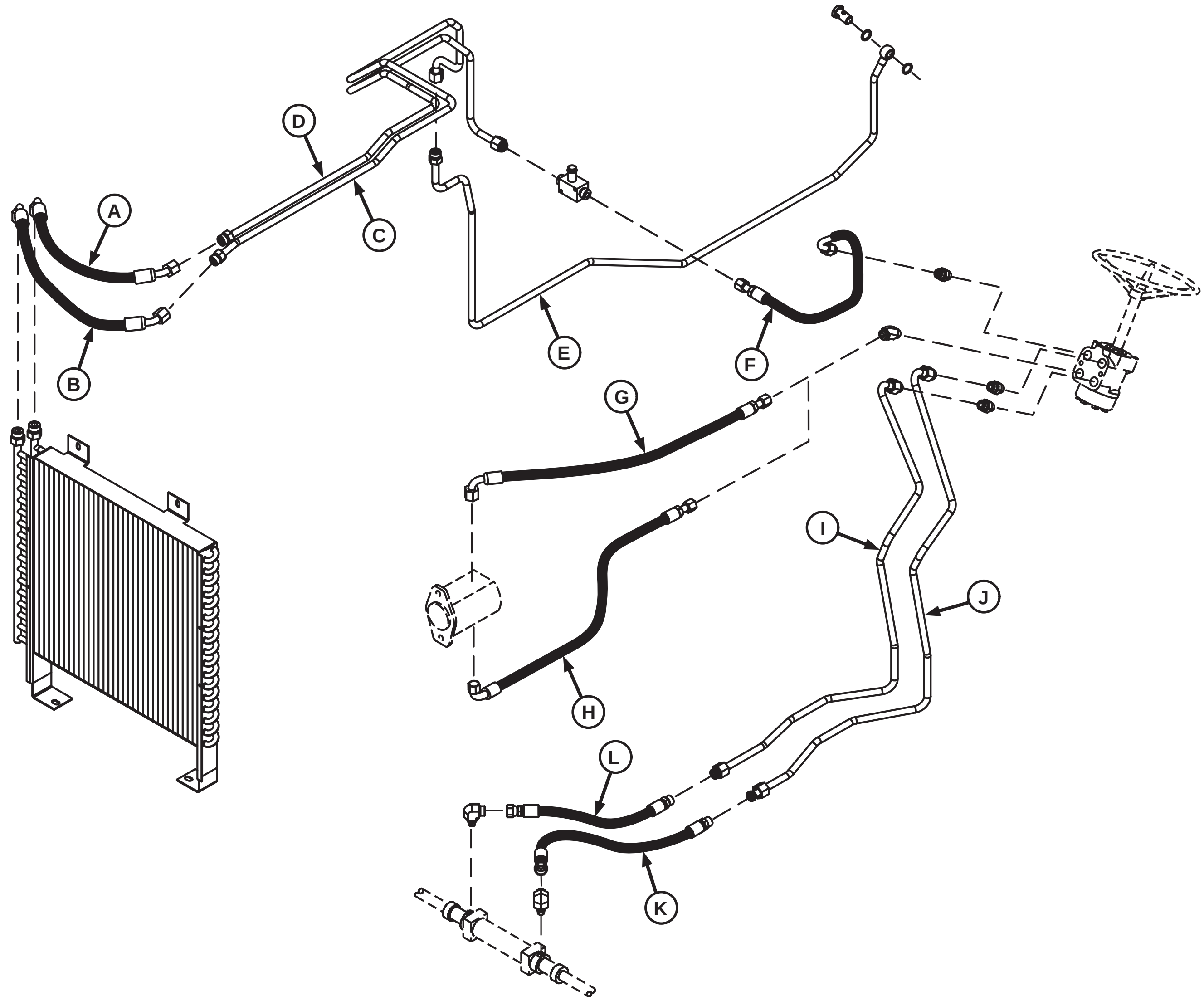


X9811 –UN–23AUG88

2. Start engine. Operate steering and check oil for leaks. Note any leaks and make repairs as necessary.
3. Stop engine and check hydraulic oil level. Fill to full mark with specified oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000090 –19–14SEP04–3/3

Inspect and Replace Steering Hydraulic Lines—Straddle Mount (With Oil Cooler)



LV10679 –UN–01OCT04

Continued on next page

A—Oil Cooler Inlet Hose
B—Oil Cooler Outlet Hose
C—Oil Cooler Outlet Line
D—Oil Cooler Inlet Line
E—Return Line-to-Transmission
F—Steering Valve-to-Oil Cooler Hose
G—Hydraulic Pump-to-Steering Valve Supply Hose (4-Cylinder Engine)
H—Hydraulic Pump-to-Steering Valve Supply Hose (5-Cylinder Engine)
I—Right Steering Line
J—Left Steering Line
K—Left Steering Hose-to-Steering Cylinder
L—Right Steering Hose-to-Steering Cylinder

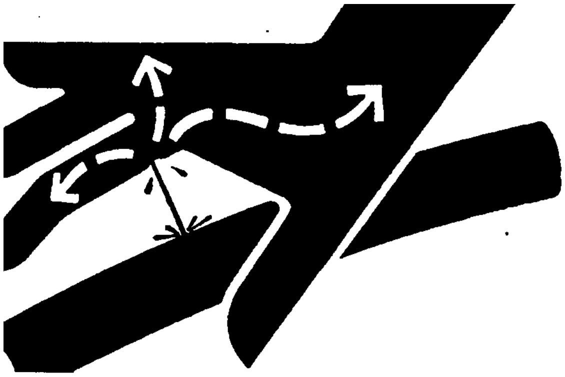
IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

1. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

JG31785,0000091 –19–14SEP04–2/3

⚠ **CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.**

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



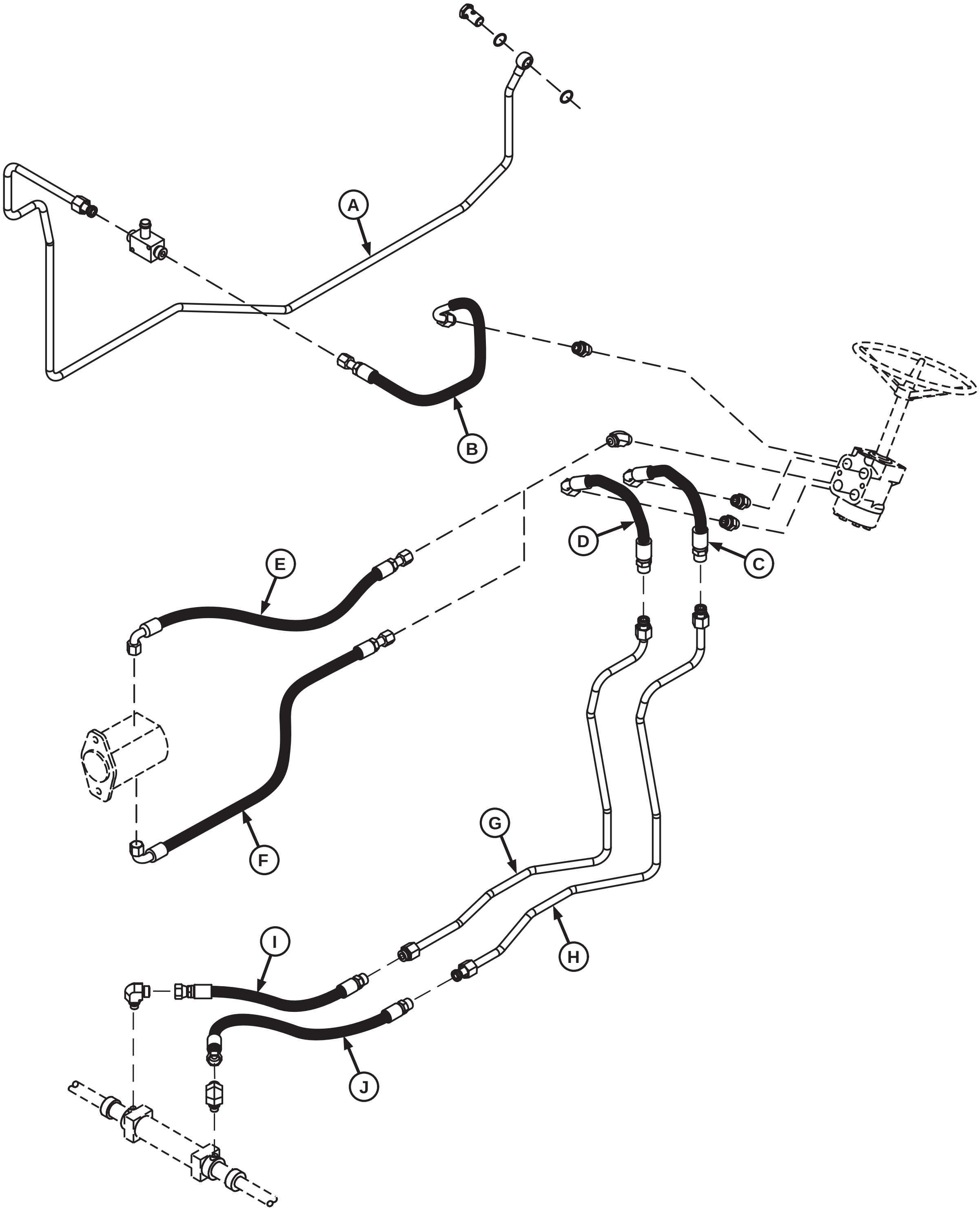
X9811 –UN–23AUG88

2. Start engine. Operate steering and check for oil leaks. Note any leaks and make repairs as necessary.

3. Stop engine and check hydraulic oil level. Fill to full mark with specified oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000091 –19–14SEP04–3/3

Inspect and Replace Steering Hydraulic Lines—Isolated Open Operator Station and Cab Tractors (Without Oil Cooler)



LV10678 –UN–01OCT04

Continued on next page

A—Return Line-to-Transmission	**C—Left Steering Hose**	**F—Hydraulic Pump-to-Steering Valve Supply Hose (5-Cylinder Engine)**	**I—Right Steering Hose-to-Steering Cylinder**
B—Steering Valve-to-Transmission Return Line Hose	**D—Right Steering Hose**	**G—Right Steering Line**	**J—Left Steering Hose-to-Steering Cylinder**
	E—Hydraulic Pump-to-Steering Valve Supply Hose (4-Cylinder Engine)	**H—Left Steering Line**	

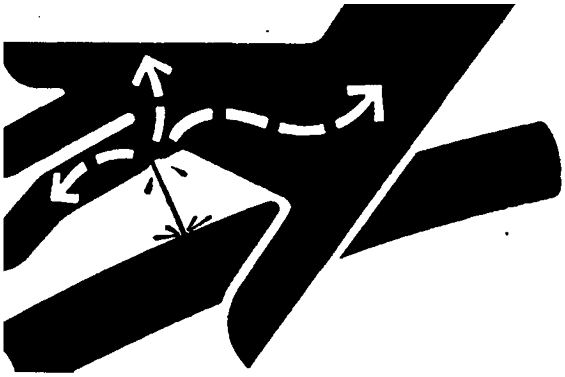
IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

1. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

JG31785,0000092 –19–14SEP04–2/3

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

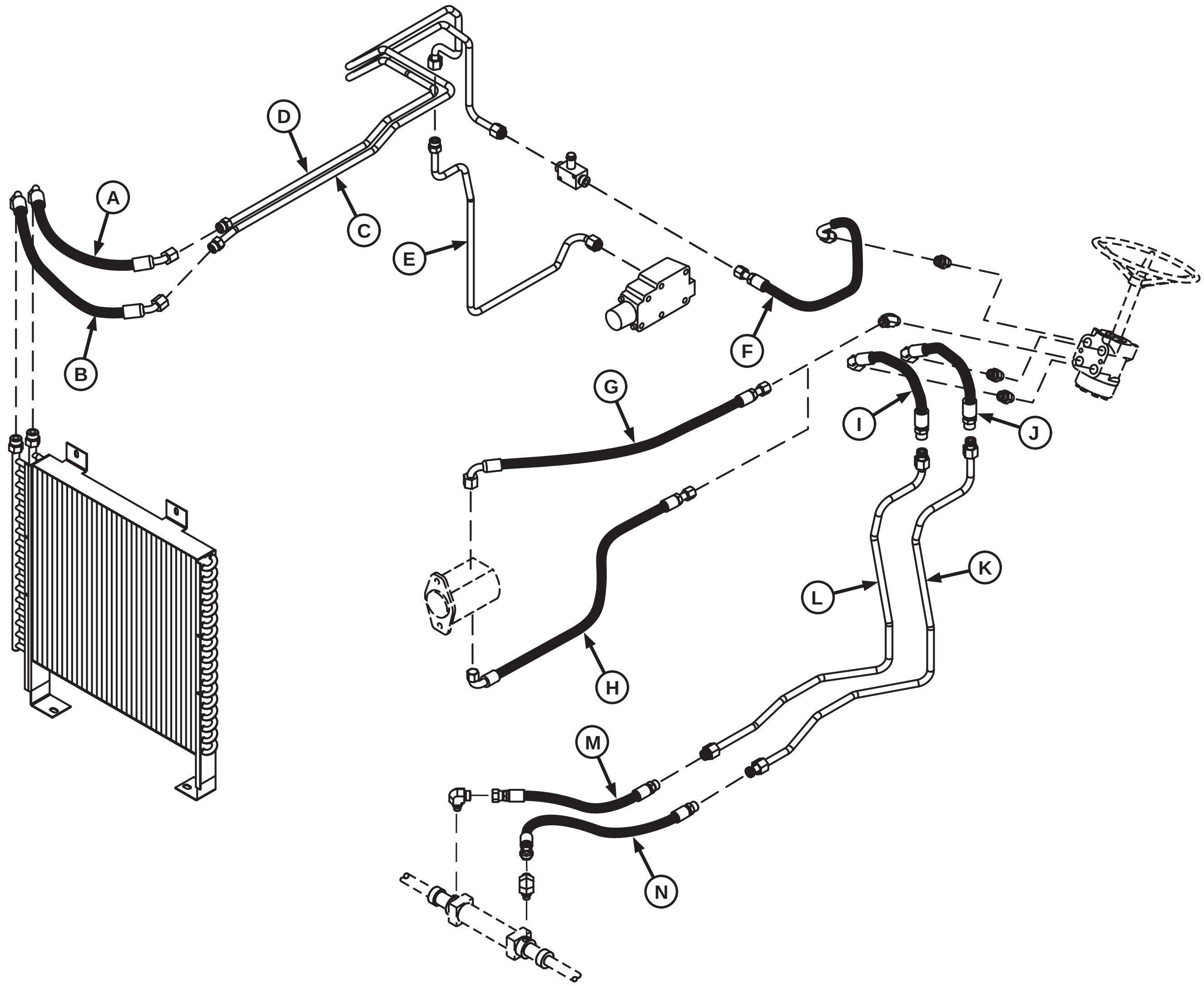


X9811 –UN–23AUG88

2. Start engine. Operate steering and check for oil leaks. Note any leaks and make repairs as necessary.
3. Stop engine and check hydraulic oil level. Fill to full mark with specified oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000092 –19–14SEP04–3/3

Inspect and Replace Steering Hydraulic Lines—Isolated Open Operator Station and Cab Tractors (With Oil Cooler)



LV10680 –UN–01OCT04

Continued on next page

JG31785,0000093 –19–14SEP04–1/3

A—Oil Cooler Inlet Hose
B—Oil Cooler Outlet Hose
C—Oil Cooler Outlet Line
D—Oil Cooler Inlet Line
E—Hi/Lo Valve Inlet Line
F—Steering Valve-to-Oil Cooler Hose
G—Hydraulic Pump-to-Steering Valve Supply Hose (4-Cylinder Engine)
H—Hydraulic Pump-to-Steering Valve Supply Hose (5-Cylinder Engine)
I—Right Steering Hose
J—Left Steering Hose
K—Left Steering Line
L—Right Steering Line
M—Right Steering Hose-to-Steering Cylinder
N—Left Steering Hose-to-Steering Cylinder

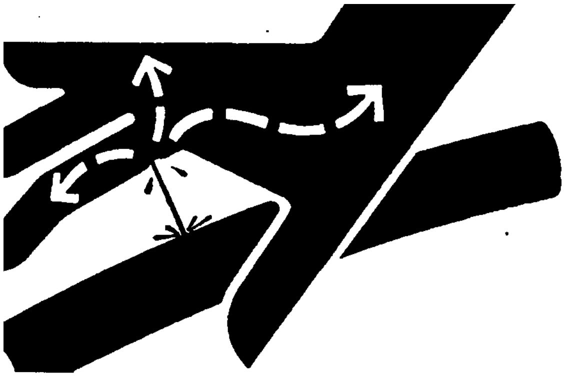
IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

1. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

JG31785,0000093 –19–14SEP04–2/3

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



2. Start engine. Operate steering and check for oil leaks. Note any leaks and make repairs as necessary.

3. Stop engine and check hydraulic oil level. Fill to full mark with specified oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000093 –19–14SEP04–3/3

Brake Repair

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO6037,0000006 –19–31AUG04–1/4

Bushing, Bearing, and Seal Driver Set

Used to remove and install brake valve seals.

OUO6037,0000006 –19–31AUG04–2/4

Bushing, Bearing, and Seal Driver Set

Used to drive retractors and piston into final drive housing.

OUO6037,0000006 –19–31AUG04–3/4

3-Way Straight Jaw Puller

Used to remove brake piston assembly from Hi-Crop axle housing.

OUO6037,0000006 –19–31AUG04–4/4

Other Material

Number	Name	Use
PM38654 (U.S.) PM38624 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of brake return compression spring assemblies.

LOCTITE is a trademark of Loctite Corp.

OUO6037,0000007 –19–31AUG04–1/1

Specifications

Item	Measurement	Specification
Brake Valve Mounting Cap Screw	Torque	70 N•m (52 lb-ft)
Brake Valve Inlet Check Valve	Torque	73 N•m (54 lb-ft)
Pressure Equalizing Valve Plug	Torque	37 N•m (27 lb-ft)
Outlet Check Valve Spring Seat Fitting	Torque	92 N•m (68 lb-ft)
Retractor Spring-to-Piston	Torque	15 N•m (133 lb-in.)
Piston-to-Final Drive Housing Surface	Distance	12.4—12.8 mm (0.48—0.50 in.)

OUO6037,0000011 –19–01SEP04–1/1

Remove and Install Brake Valve and Pedals

NOTE: Isolated open operator station tractor shown. Other tractors are similar.

1. Remove cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

NOTE: Close all openings with caps and plugs.

2. Disconnect hoses (C and D).

3. Disconnect lines (E).

4. Remove two upper brake valve mounting cap screws (F). Remove retainer (A) and hose fittings (B).

5. Remove two lower mounting cap screws (F) and brake valve.

6. Make repairs as necessary. (See Disassemble and Inspect Brake Pedals and Valve in Section 60, Group 10.)

7. Install brake valve. Install two lower mounting cap screws only and tighten finger tight.

IMPORTANT: Replace O-rings. Damaged or used O-rings will leak.

8. Install hose fittings (B) with new O-rings. Install retainer (A) and upper mounting cap screws. Tighten all brake valve mounting cap screws to specification.

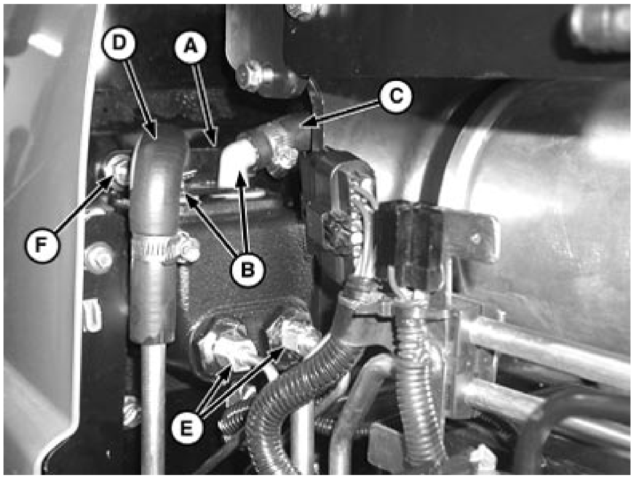
Specification

Brake Valve Mounting Cap Screw—Torque.. 70 N•m (52 lb-ft)

9. Connect hoses and lines (C—E).

10. Install cowl cover. (See Remove and Install Cowl Cover in Section 90, Group 06.)

11. Start engine. Run at idle speed for several minutes to fill brake valve with transmission/hydraulic oil. Shut off engine.



LV10870 –UN–07OCT04

A—Retainer
B—Hose Fittings
C—Supply Hose
D—Return Hose
E—Brake Lines
F—Mounting Cap Screw (4 used)

Continued on next page

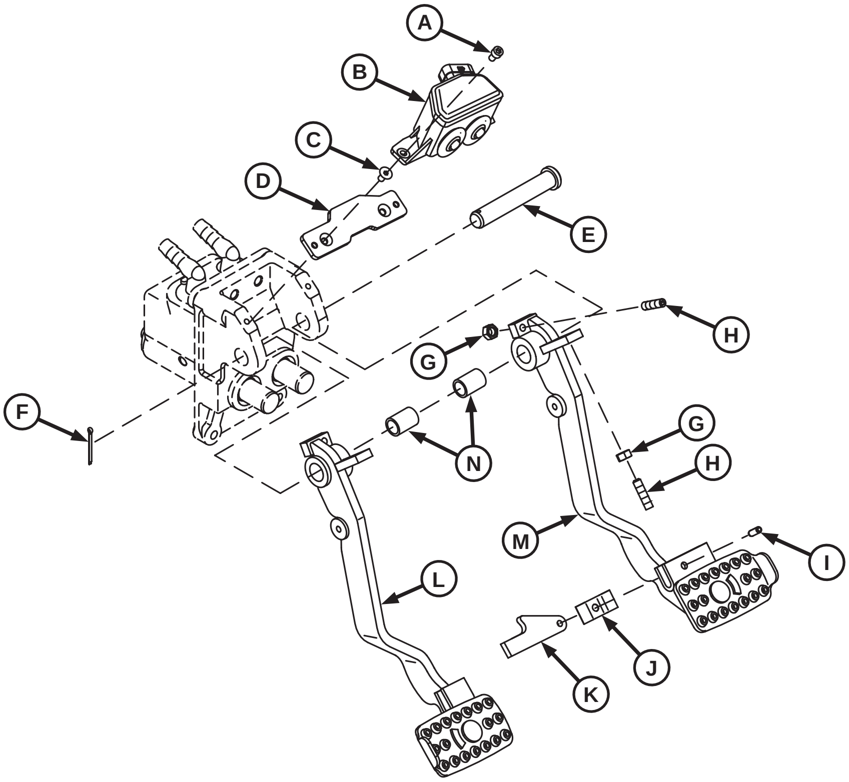
12. Apply pressure to both brake pedals and loosen brake lines (E) slightly to bleed air from brake valve and lines.

13. Repeat as necessary.

14. Check and adjust transmission/hydraulic oil level. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

OUO6037,0000009 –19–31AUG04–2/2

Disassemble and Inspect Brake Pedals and Valve



A—Screw (2 used)	**E—Pivot Shaft**	**I—Spring Pin**	**L—Left-Hand Brake Pedal**
B—Switch	**F—Cotter Pin**	**J—Leaf Spring**	**M—Right-Hand Brake Pedal**
C—Screw (2 used)	**G—Jam Nut (4 used)**	**K—Lock Plate**	**N—Bushing (2 used)**
D—Plate	**H—Set Screw (4 used)**		

NOTE: Parts (A—D, G, and H) are for POWRREVERSER™ equipped tractors only.

1. Remove brake valve and pedals. (See Remove and Install Brake Valve and Pedals in Section 60, Group 10.)

2. Disengage lock plate (K).

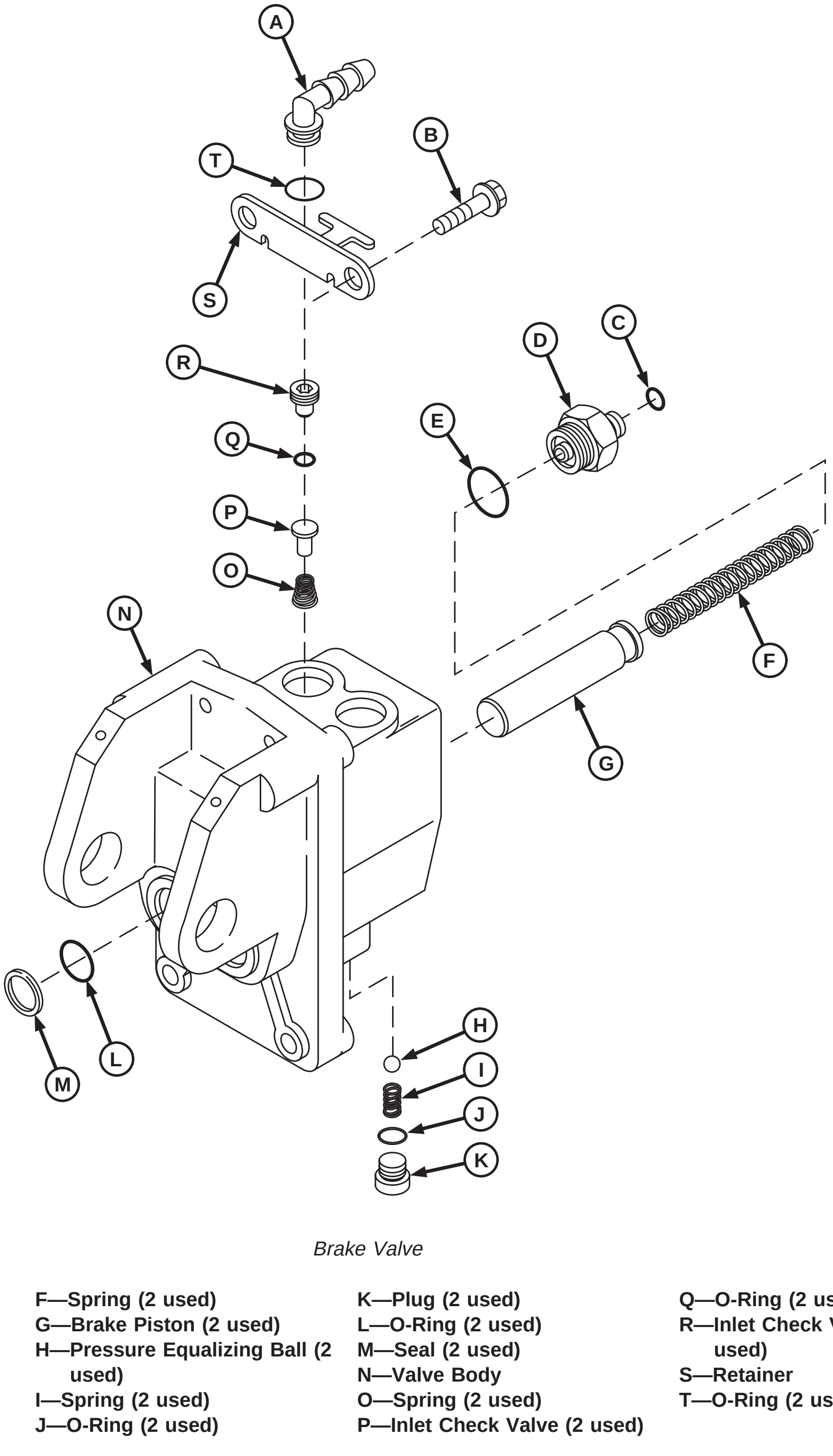
3. Remove cotter pin (F) to remove pivot shaft (E) and pedals (L and M).

NOTE: Bushings (N) are press fit in pedals. Remove bushings only if replacement is necessary.

4. Inspect parts for wear or damage. Replace as necessary.

POWRREVERSER is a trademark of Deere & Company

Continued on next page



LV10597 –UN–13OCT04

Brake Valve

A—Elbow Fitting
B—Cap Screw (4 used)
C—O-Ring (2 used)
D—Spring Seat and Outlet Fitting (2 used)
E—O-Ring (2 used)
F—Spring (2 used)
G—Brake Piston (2 used)
H—Pressure Equalizing Ball (2 used)
I—Spring (2 used)
J—O-Ring (2 used)
K—Plug (2 used)
L—O-Ring (2 used)
M—Seal (2 used)
N—Valve Body
O—Spring (2 used)
P—Inlet Check Valve (2 used)
Q—O-Ring (2 used)
R—Inlet Check Valve Seat (2 used)
S—Retainer
T—O-Ring (2 used)

NOTE: Parts (A, B, S, and T) were removed during brake valve removal.

5. Remove parts (O—R).

Continued on next page

6. Remove parts (H—K).

⚠ **CAUTION: Spring seats (D) are under spring pressure. Hold seat firmly while removing.**

Do not remove ball and spring valve inside of spring seat (D).

7. Remove parts (C—G).

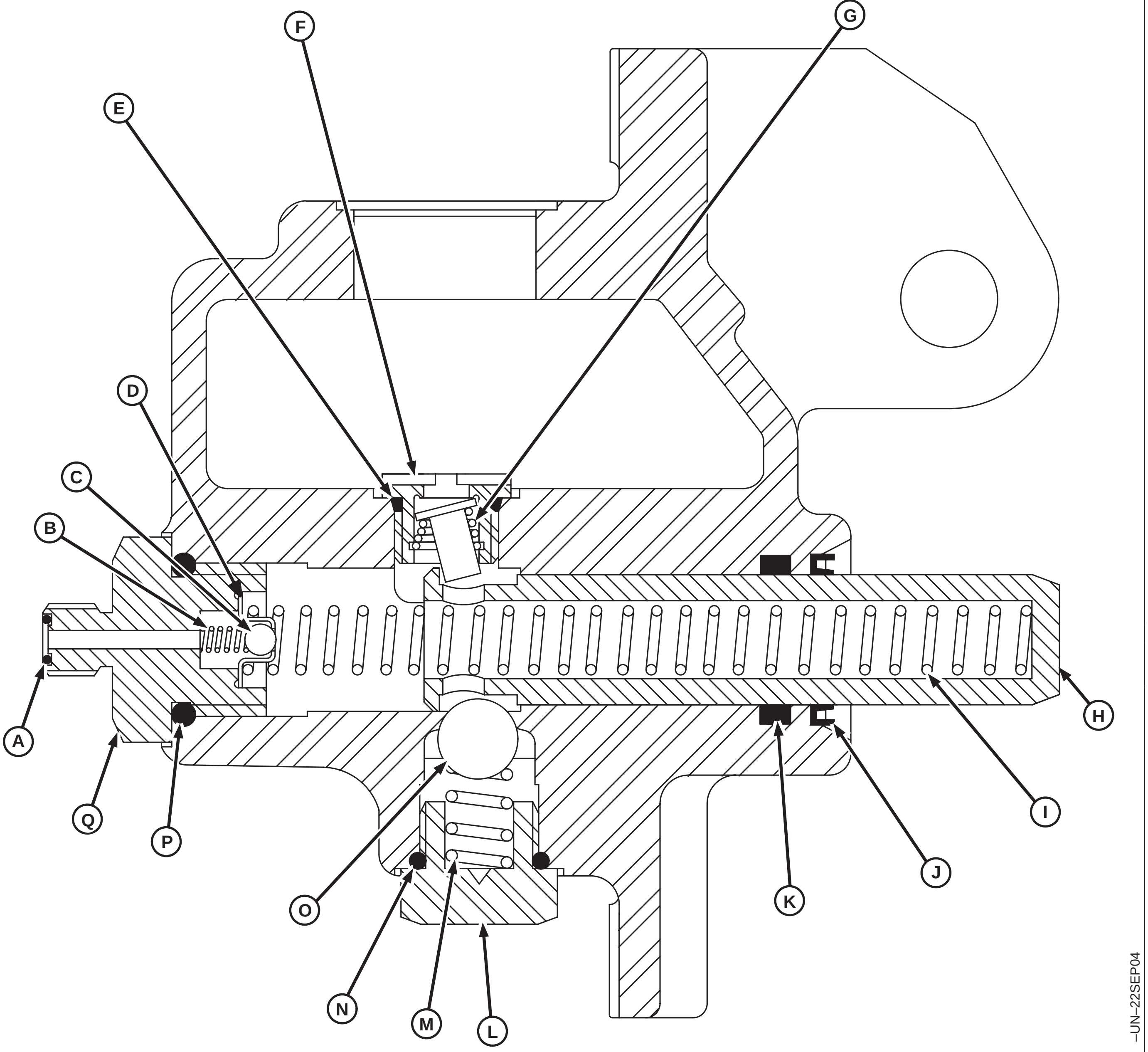
IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

8. Pry out seals (M) and remove O-rings (L). Install new seals with lips facing away from valve using a bushing, bearing, and seal driver set.

9. Inspect all parts for wear or damage. Replace as necessary.

OUO6037,000000A –19–31AUG04–3/3

Brake Valve Cross Section



A—O-Ring (2 used)
B—Spring (2 used)
C—Outlet Check Ball (2 used)
D—Retainer (2 used)
E—O-Ring (2 used)
F—Inlet Check Valve Seat (2 used)
G—Spring (2 used)
H—Brake Piston (2 used)
I—Spring (2 used)
J—Seal (2 used)
K—O-Ring (2 used)
L—Plug (2 used)
M—Spring (2 used)
N—O-Ring (2 used)
O—Pressure Equalizing Ball (2 used)
P—O-Ring (2 used)
Q—Fitting (2 used)

OUO6037,000000B –19–31AUG04–1/1

Assemble Brake Valve

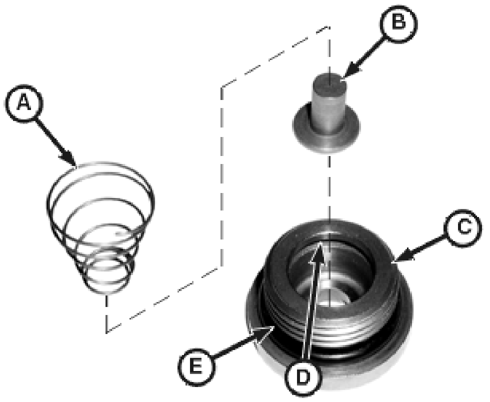
IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

Inlet check valves must be installed before brake pistons to ensure proper position of check valve in relation to piston.

NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

1. Install check valve (B) and spring (A) into seat (C). Ensure spring is seated in groove (D).

2. Install new O-ring (E) on check valve seat.



LV6807 –UN–11MAY01

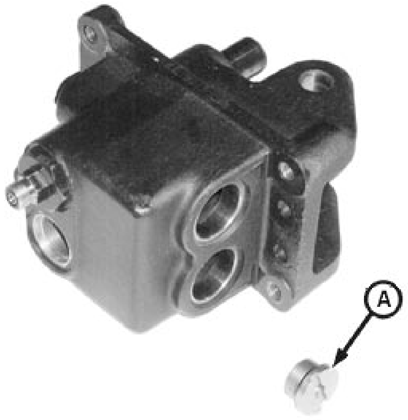
A—Spring
B—Check Valve
C—Seat
D—Groove
E—O-Ring

OUO6037,000000C –19–31AUG04–1/5

3. Install check valve assembly (A) and tighten to specification.

Specification	
Brake Valve Inlet Check Valve— Torque	73 N•m (54 lb-ft)

A—Inlet Check Valve Assembly



LV6849 –UN–11MAY01

Continued on next page

OUO6037,000000C –19–31AUG04–2/5

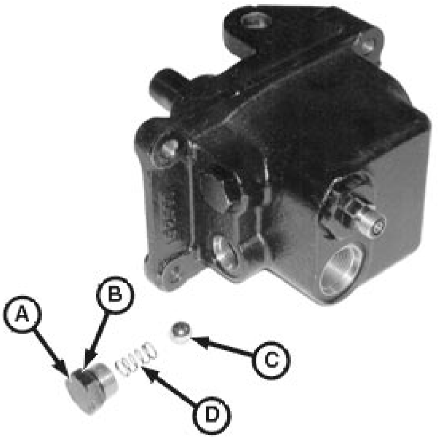
4. Install new O-ring (B).

5. Install ball (C), spring (D), and plug (A). Tighten plug to specification.

Specification

Pressure Equalizing Valve Plug—Torque	37 N•m (27 lb-ft)

A—Plug (2 used)
B—O-Ring (2 used)
C—Pressure Equalizing Ball (2 used)
D—Spring (2 used)



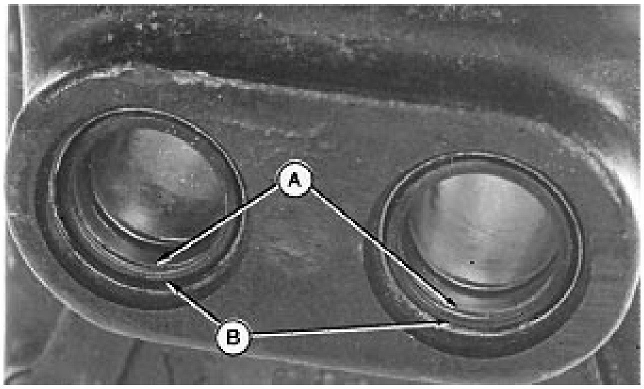
LV6850 –UN–11MAY01

OUO6037,000000C –19–31AUG04–3/5

6. Install new O-rings (A).

7. Apply multipurpose grease to lips of seals (B).

A—O-Ring
B—Seal



LV022 –UN–09MAR92

Continued on next page

OUO6037,000000C –19–31AUG04–4/5

8. Install new O-ring (A).

9. Install parts (B—D). Tighten check valve spring seat fitting (B) to specification.

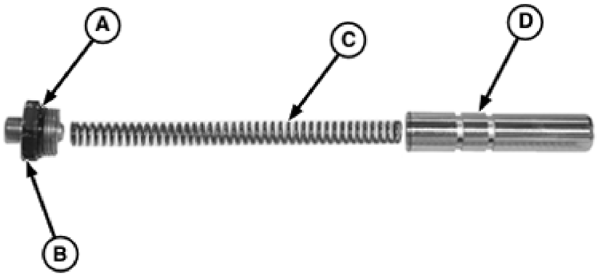
Specification

Outlet Check Valve Spring Seat Fitting—Torque .... 92 N•m (68 lb-ft)

10. Install brake pedals, pivot shaft, and cotter pin on brake valve.

11. Install brake valve and pedals. (See Remove and Install Brake Valve and Pedals in Section 60, Group 10.)

12. Adjust brake pedals. (See Reference 260-15-011, Brake Pedal Adjustment in TM2197 Section 260, Group 15.)



LV10871 –UN–07OCT04

A—O-Ring (2 used)
B—Check Valve Spring Seat Fitting (2 used)
C—Spring (2 used)
D—Brake Piston

OUO6037,000000C –19–31AUG04–5/5

Remove and Inspect Brakes

NOTE: Standard rear axle shown. Hi-Crop drop axle is similar.

1. **Tractors equipped with standard rear axles:** Remove final drive assembly. (See Remove and Install Final Drive Assembly in Section 50, Group 30.)

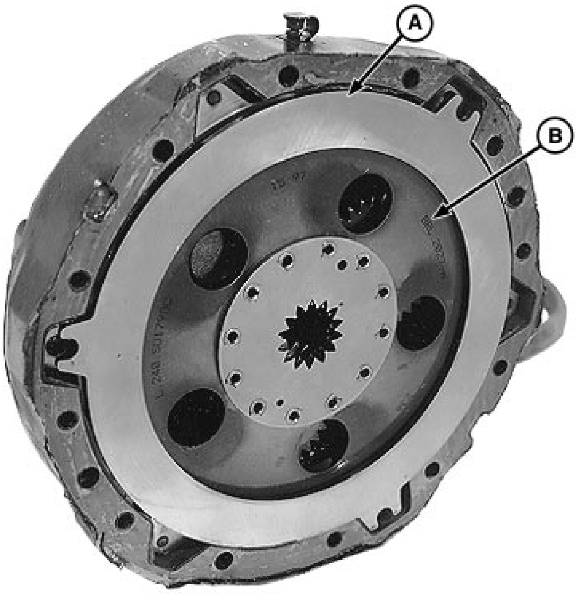
2. **Tractors equipped with Hi-Crop drop axles:** Remove Hi-Crop axle assembly. (See Remove and Install Hi-Crop Axle Assembly in Section 50, Group 31.)

3. Remove back plate (A) and friction disc (B).

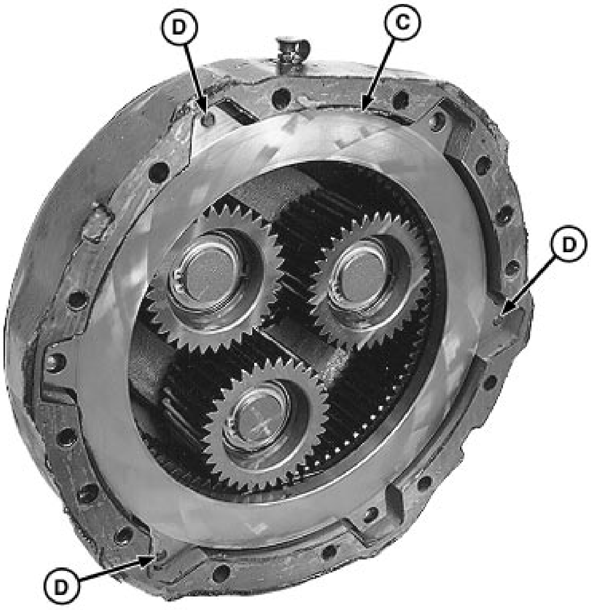
NOTE: Piston assembly is press fit into axle housing. Remove only if necessary.

4. **Tractors equipped with standard rear axles:** Remove piston assembly (C) using a pry bar. Pry at three retractor locations (D) evenly until piston assembly is removed.

A—Back Plate
B—Friction Disc
C—Piston Assembly
D—Retractor (3 used)



Left Side Shown



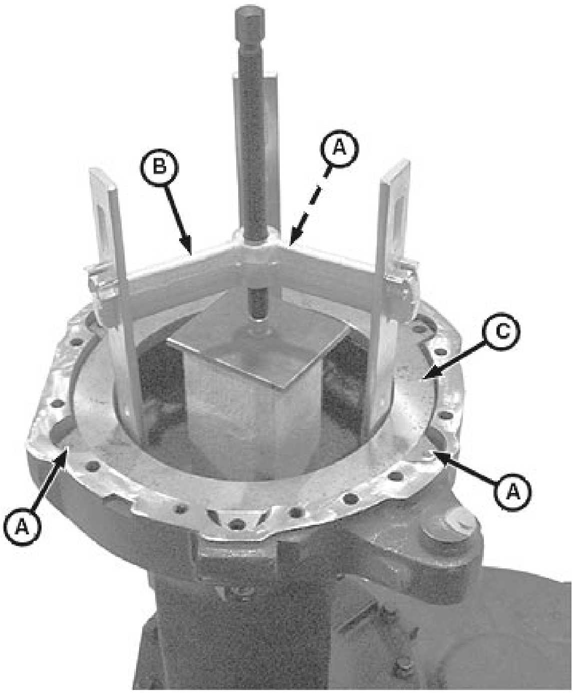
Continued on next page

OUO6037,000000E –19–31AUG04–1/3

NOTE: When removing piston assembly from the Hi-Crop axle a 3-way straight jaw puller with a minimum spread of 10 inches is required.

5. **Tractors equipped with Hi-Crop drop axles:** Position spacer block inside axle housing and position puller jaws at three retractor locations (A). Remove piston assembly (C) using a 3-way straight jaw puller (B).

6. Inspect piston ring and piston ring bore in axle housing for scoring or damage.

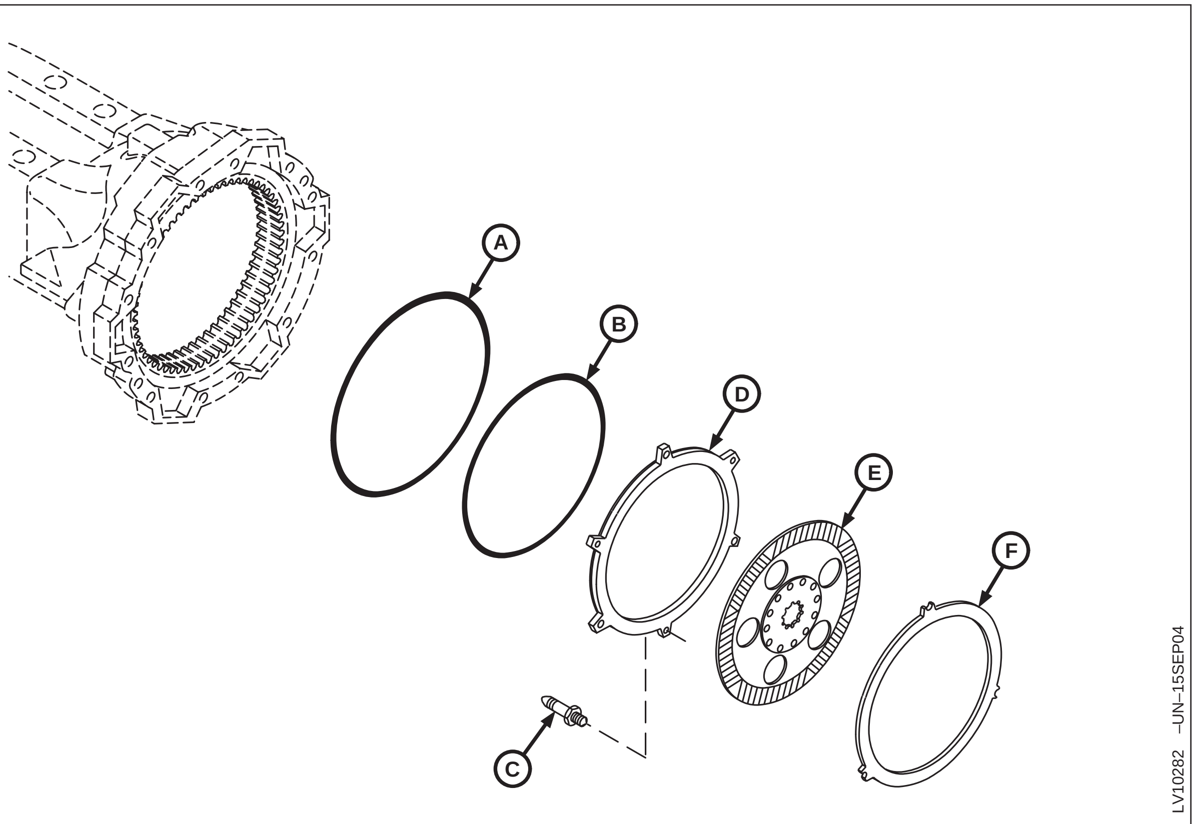


LV7157 –UN–12MAR02

A—Retractor (3 used)
B—3-Way Straight Jaw Puller
C—Piston Assembly

Continued on next page

OUO6037,000000E –19–31AUG04–2/3



A—Outer O-Ring
B—Inner O-Ring
C—Retractor Spring (3 used)
D—Piston
E—Friction Disc
F—Back Plate

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

7. Replace the inner and outer O-rings (A and B).

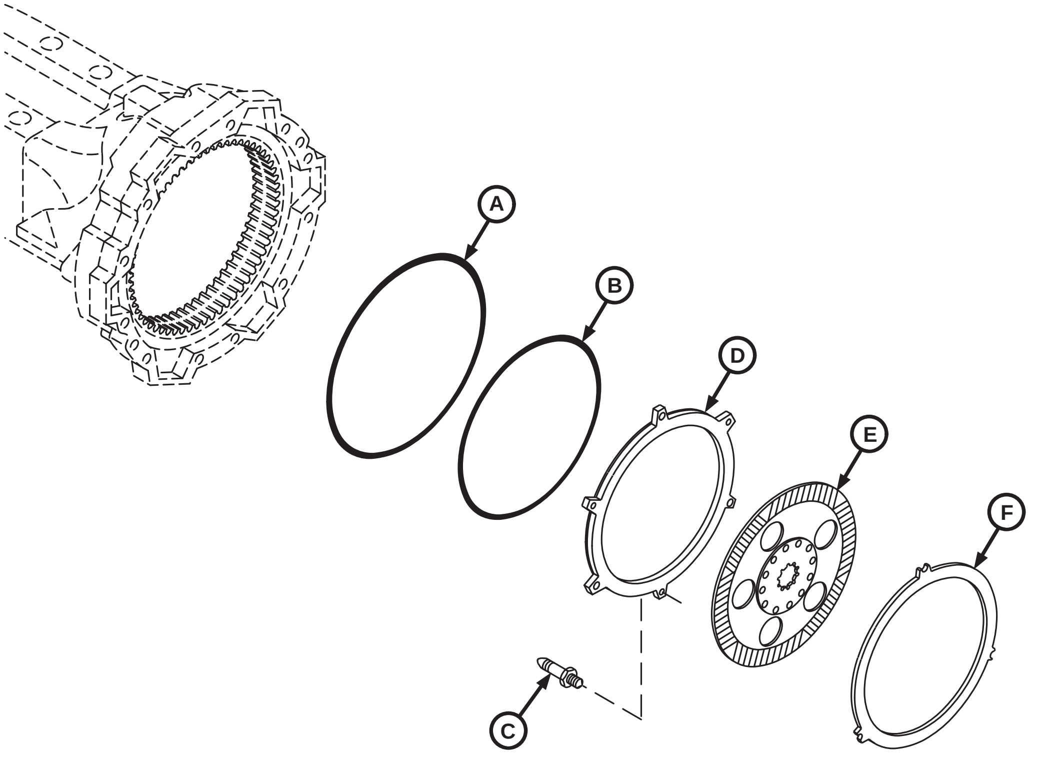
NOTE: Retractor springs (C) are threaded into piston (D).

8. Remove retractor spring (C).

9. Inspect parts (A—F) for wear or damage. Check piston (D) and plate (F) for warpage. Replace parts as necessary.

OUO6037,000000E –19–31AUG04–3/3

Install Brakes



LV10282 –UN–15SEP04

A—Outer O-Ring
B—Inner O-Ring
C—Retractor Spring (3 used)
D—Piston
E—Friction Disc
F—Back Plate

NOTE: Standard rear axle shown. Hi-Crop drop axle is similar.

1. Apply Thread Lock And Sealer (High Strength) to threads on each retractor spring (C).

2. Install retractor springs (C) into piston (D). Tighten to specification.

Specification

Retractor Spring-to-Piston—Torque	15 N•m (133 lb-in.)

3. Install new O-rings (A and B). Apply hydraulic oil to inside and outside diameter of piston (D).

Continued on next page

OUO6037,000000F –19–31AUG04–1/3

4. Install piston (A) and retractors into final drive housing using a cross beam (B) from a bushing, bearing, and seal driver set or equivalent type set-up.

5. Remove cross beam set-up (B).

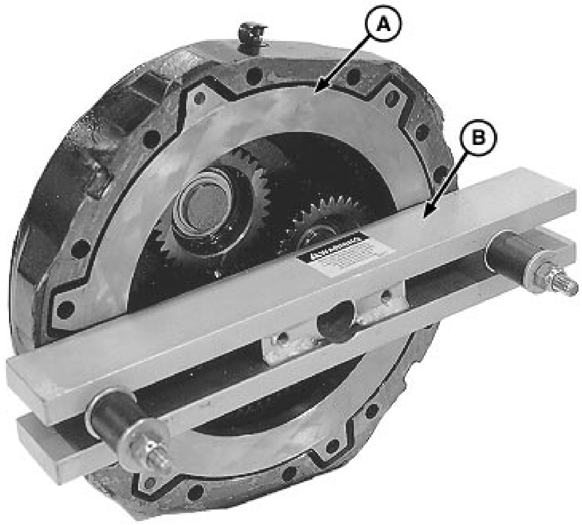
IMPORTANT: Seat retractors and piston to specification (E) as shown. If not seated to specification, brake drag may result.

6. Place a C-clamp over each retractor and turn clamps evenly until retractors and piston are seated in axle housing. See measurement specifications below.

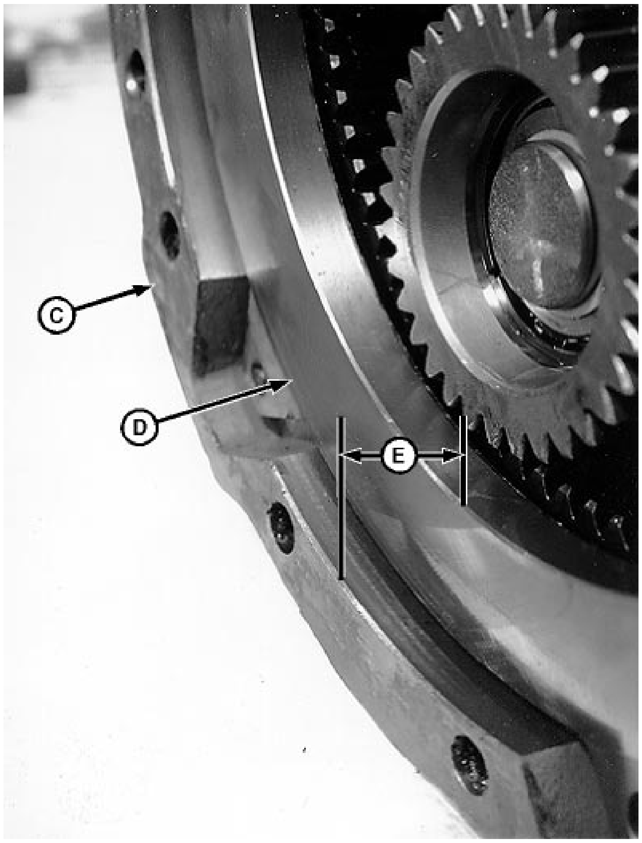
7. Using a depth gauge, measure the distance (E) from the mating surface of axle housing (C) to face of piston (D) as shown. Compare to specification for properly seated piston.

Specification	
Piston-to-Final Drive Housing Surface—Distance	12.4—12.8 mm (0.48—0.50 in.)

A—Piston
B—Cross Beam
C—Mating Surface of Axle Housing
D—Piston Face
E—Measurement Specification



LV10276 –UN–08SEP04



LV2405 –UN–16DEC97

Continued on next page

OUO6037,000000F –19–31AUG04–2/3

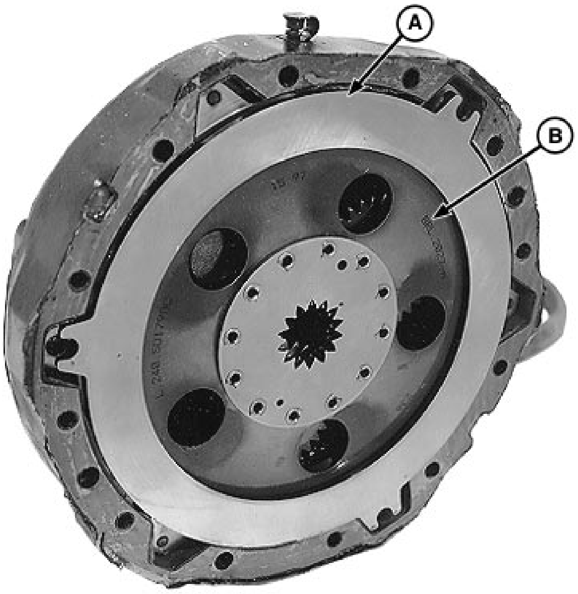
IMPORTANT: Back plate (A) is machine-finished on one side only. Plates must be installed so that machine-finished side of plate (A) is facing friction disc (B).

8. Install friction disc (B) and back plate (A).

9. **Tractors equipped with standard rear axle:** Install final drive assembly. (See Remove and Install Final Drive Assembly in Section 50, Group 30.)

10. **Tractors equipped with Hi-Crop drop axle:** Install Hi-Crop axle assembly. (See Remove and Install Hi-Crop Axle Assembly in Section 50, Group 31.)

11. Adjust brake. (See Reference 260-15-012, Adjust Brake Retractors in TM2197 Section 260, Group 15.)

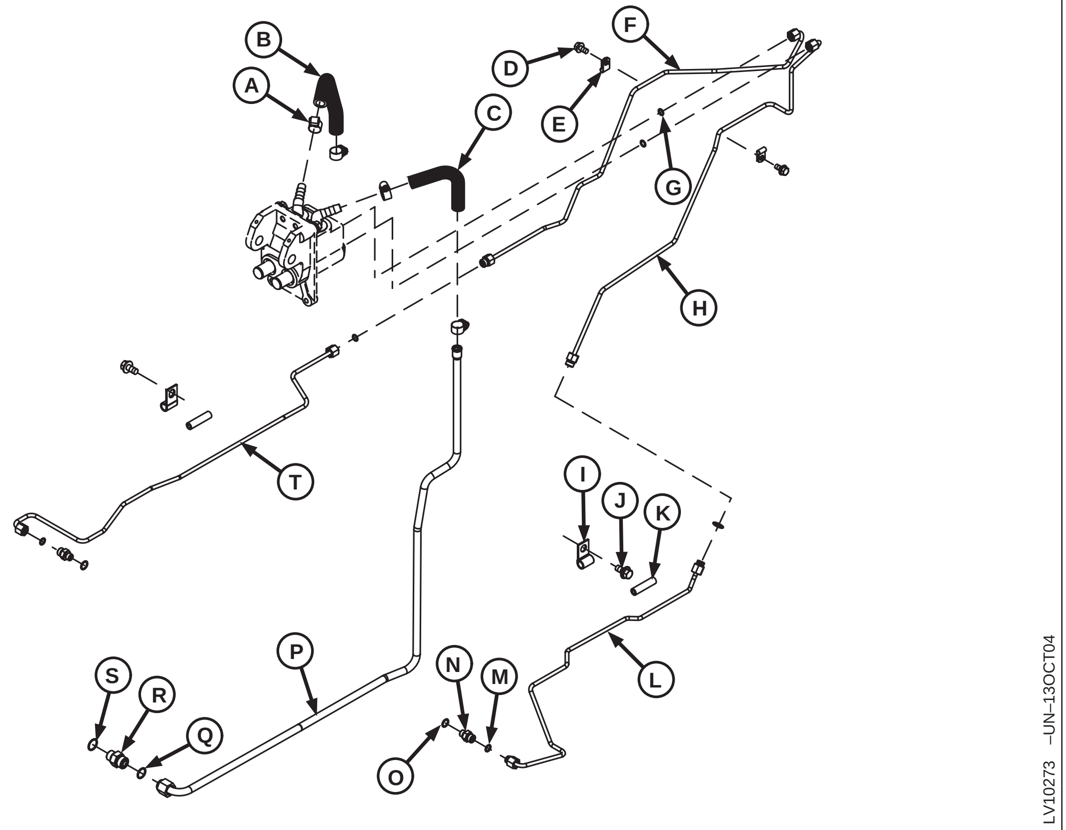


LV10283 –UN–08SEP04

A—Back Plate
B—Friction Disc

OUO6037,000000F –19–31AUG04–3/3

Inspect and Replace Brake Hydraulic Lines

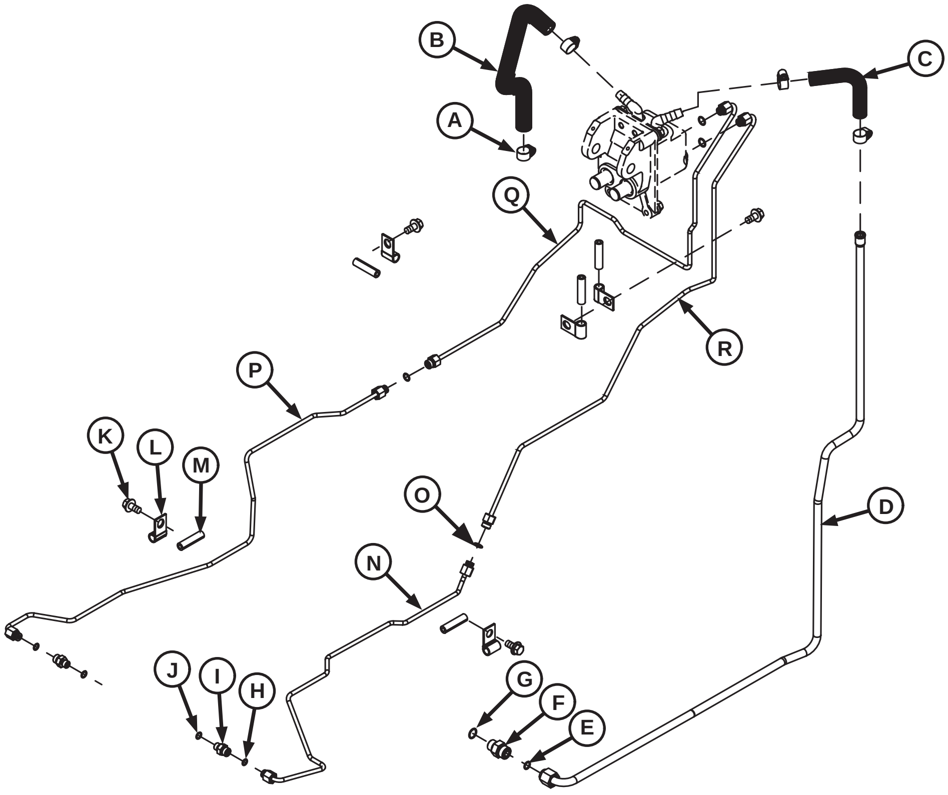


Straddle Mount

A—Hose Clamp (4 used)
B—Hose, Supply
C—Hose, Return
D—Screw (2 used)
E—Clamp (2 used)
F—Pressure Line from Brake Valve (Left)
G—O-Ring (4 used)
H—Pressure Line from Brake Valve (Right)
I—Clamp (2 used)
J—Screw (2 used)
K—Isolator (2 used)
L—Pressure Line-to-Right Brake
M—O-Ring (2 used)
N—Adapter (2 used)
O—O-Ring (2 used)
P—Brake Valve-to-Transmission Return Line
Q—O-Ring
R—Adapter
S—O-Ring
T—Pressure Line-to-Left Brake

Continued on next page

OUO6037,0000010 –19–31AUG04–1/2



Cab/Isolated Open Operator Station

A—Clamp (4 used)
B—Hose, Return
C—Hose, Supply
D—Brake Valve-to-Transmission Return Line
E—O-Ring
F—Adapter
G—O-Ring
H—O-Ring (2 used)
I—Adapter (2 used)
J—O-Ring (2 used)
K—Screw (3 used)
L—Clamp (5 used)
M—Isolator (5 used)
N—Pressure Line-to-Right Brake
O—O-Ring
P—Pressure Line-to-Left Brake
Q—Pressure Line from Brake Valve (Left)
R—Pressure Line from Brake Valve (Right)

1. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

2. Bleed brakes. (See Reference 260-15-009, Bleed Rear Brakes in TM2197 Section 260, Group 15.)

3. Check transmission/hydraulic oil level. Add fluid if necessary. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

OUO6037,0000010 –19–31AUG04–2/2

Section 70
Hydraulic Repair

Contents

Page

Group 05—Hydraulic Pump and Filter
Service Parts Kit 70-05-1
Service Equipment and Tools 70-05-1
Specifications 70-05-2
Remove, Inspect, and Install Hydraulic Oil Pick-Up Screen 70-05-3
Remove and Install Hydraulic Pump—5-Cylinder Engine 70-05-4
Remove Hydraulic Pump External Components—5-Cylinder Engine 70-05-5
Disassemble and Inspect Hydraulic Pump—5-Cylinder Engine 70-05-6
Assemble Hydraulic Pump—5-Cylinder Engine 70-05-8
Install Hydraulic Pump External Components—5-Cylinder Engine 70-05-10
Remove and Install Hydraulic Pump—4-Cylinder Engine .70-05-11
Remove Hydraulic Pump External Components—4-Cylinder Engine 70-05-12
Disassemble and Inspect Hydraulic Pump—4-Cylinder Engine .70-05-13
Assemble Hydraulic Pump—4-Cylinder Engine 70-05-15
Install Hydraulic Pump External Components—4-Cylinder Engine 70-05-16
Remove and Install Hydraulic Oil Filter/Manifold 70-05-17
Inspect and Replace Hydraulic Supply/Return Lines—4-Cylinder Tractors (With SCV) 70-05-18
Inspect and Replace Hydraulic Supply/Return Lines—4-Cylinder Tractors (Without SCV) 70-05-19
Inspect and Replace Hydraulic Supply/Return Lines—5-Cylinder Tractors (With SCV) 70-05-20
Inspect and Replace Hydraulic Supply/Return Lines—5-Cylinder Tractors (Without SCV) 70-05-21

Group 06—Hydraulic Oil Cooler
Remove, Inspect, and Install Hydraulic Oil Cooler 70-06-1

Group 10—Rockshaft
Service Parts Kits 70-10-1

Page

Other Material 70-10-1
Specifications 70-10-2
Inspect and Repair Rockshaft Control Assembly—Straddle Mount 70-10-3
Inspect and Repair Rockshaft Control Assembly—Isolated Open Operator Station and Cab Tractors. 70-10-7
Inspect and Repair Rockshaft Control Levers and Cables—Isolated Open Operator Station and Cab Tractors. 70-10-11
Inspect and Repair Rockshaft Control Linkage 70-10-14
Remove and Install Rockshaft Control Valve—Straddle Mount 70-10-17
Remove and Install Rockshaft Control Valve—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch . . .70-10-21
Replace Main Relief Valve—All Tractors With Mechanical Hitch .70-10-25
Replace Hitch Relief Valve—All Tractors With Mechanical Hitch .70-10-27
Replace Load Sense Relief Valve—All Tractors With Mechanical Hitch 70-10-29
Remove, Inspect, and Install Rate-of-Drop Valve—All Tractors With Mechanical Hitch 70-10-31
Remove and Install Rockshaft Control Valve—All Tractors With Electro-Hydraulic Hitch 70-10-33
Rockshaft Control Valve Repair—All Tractors With Electro-Hydraulic Hitch. 70-10-35
Rockshaft Control Valve Exploded View—All Tractors With Electro-Hydraulic Hitch . . .70-10-46
Remove and Install Rockshaft Case—Straddle Mount 70-10-48
Remove and Install Rockshaft Case—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch 70-10-55
Remove and Install Rockshaft Case—All Tractors With Electro-Hydraulic Hitch. 70-10-58
Remove, Inspect, and Install Rockshaft Lift Arms 70-10-62
Remove, Inspect, and Install Rockshaft Piston and Cylinder 70-10-63

Continued on next page

Page

Inspect and Repair Draft Sensing Support Assembly 70-10-65

Group 15—Selective Control Valve

Service Parts Kits—Triple SCVs 70-15-1
Service Parts Kits—Dual SCVs 70-15-1
Other Material 70-15-2
Specifications 70-15-3
Inspect and Repair SCV Levers and Linkage—Straddle Mount 70-15-4
Inspect and Repair SCV Levers and Linkage—Isolated Open Operator Station and Cab Tractors 70-15-6
Remove and Install Dual or Triple Selective Control Valve (SCV) 70-15-9
Disassemble, Inspect, and Assemble Dual Selective Control Valve (SCV) 70-15-12
Triple Selective Control Valve (SCV) Cross-Sectional View 70-15-18
Disassemble, Inspect, and Assemble Triple Selective Control Valve (SCV) 70-15-19
Inspect and Replace Hydraulic Lines Single, Dual, or Triple Selective Control Valve (SCV) 70-15-29
Inspect and Replace Hydraulic Lines Single, Dual, or Triple Selective Control Valve (SCV) With Mid-Mount Valve 70-15-31

Group 20—Hydraulic Mid-Mount Control Valve

Service Parts Kits 70-20-1
Other Material 70-20-1
Specifications 70-20-2
Inspect and Repair Joystick and Linkage 70-20-3
Remove and Install Mid-Mount Control Valve 70-20-9
Disassemble, Inspect, and Assemble Dual Mid-Mount Control Valve 70-20-13
Disassemble, Inspect, and Assemble Triple Mid-Mount Control Valve 70-20-17
Inspect and Replace Hydraulic Lines on Dual or Triple Mid-Mount Control Valve 70-20-27
Inspect and Replace Hydraulic Lines on Dual or Triple Mid-Mount Control Valve With Rear SCV 70-20-29

Hydraulic Pump and Filter

Service Parts Kit

The following kits are available through your parts catalog.

Hydraulic Pump Seal Kit

JG31785,000002D –19–31AUG04–1/1

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

JG31785,000002E –19–31AUG04–1/2

Bushing, Bearing, and Seal Driver Set

Used to remove and install hydraulic pump seals.

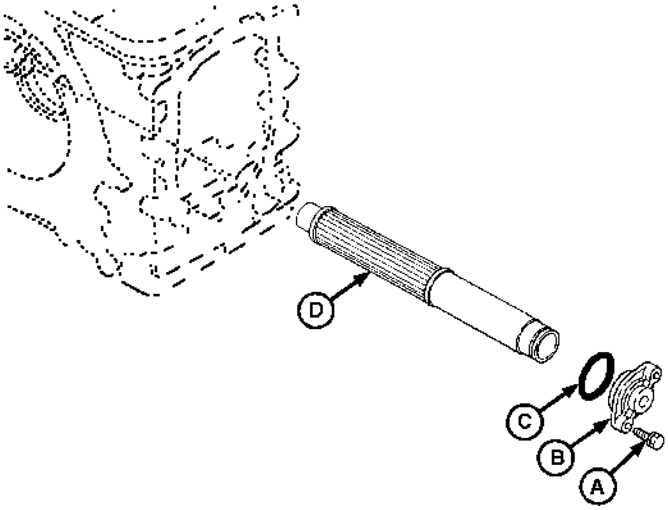
JG31785,000002E –19–31AUG04–2/2

Specifications

Item	Measurement	Specification
Pick-Up Screen Cover Cap Screw	Torque	23 N•m (17 lb-ft)
Hydraulic Pump Mounting Cap Screw—5-Cylinder Engine	Torque	125 N•m (92 lb-ft)
Hydraulic Pump Body Cap Screw—5-Cylinder Engine	Torque	48 N•m (35 lb-ft)
Hydraulic Pump Rear Outlet Fitting—5-Cylinder Engine	Torque	28 N•m (21 lb-ft)
Hydraulic Pump Front Outlet Fitting—5-Cylinder Engine	Torque	46 N•m (34 lb-ft)
Gear Retaining Nut—5-Cylinder Engine	Torque	50 N•m (37 lb-ft)
Hydraulic Pump Inlet Manifold Socket Head Cap Screws—5-Cylinder Engine	Torque	25 N•m (18 lb-ft)
Hydraulic Pump Mounting Cap Screw—4-Cylinder Engine	Torque	125 N•m (92 lb-ft)
Hydraulic Pump Body Cap Screw—4-Cylinder Engine	Torque	68 N•m (50 lb-ft)
Hydraulic Pump Rear Outlet Fitting—4-Cylinder Engine	Torque	28 N•m (21 lb-ft)
Hydraulic Pump Front Outlet Fitting—4-Cylinder Engine	Torque	46 N•m (34 lb-ft)
Hydraulic Pump Gear Nut—4-Cylinder Engine	Torque	90 N•m (66 lb-ft)
Hydraulic Pump Inlet Manifold Socket Head Cap Screws—4-Cylinder Engine	Torque	25 N•m (18 lb-ft)
Hydraulic Oil Filter/Manifold Cap Screw	Torque	55 N•m (41 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

JG31785,0000097 –19–17SEP04–1/1

Remove, Inspect, and Install Hydraulic Oil Pick-Up Screen



LV2268 –UN–28JAN98

A—Cap Screw (2 used) **B—Cover** **C—O-Ring** **D—Pick-Up Screen**

1. Drain transmission/hydraulic oil.

2. Remove cap screws (A), cover (B), and O-ring (C).

3. Remove pick-up screen (D) and inspect for damage. Replace if necessary.

4. Clean undamaged pick-up screen in solvent and blow dry with compressed air.

5. Install pick-up screen (D) into differential case.

IMPORTANT: Replace O-ring. Damaged or used O-rings will leak.

6. Install new O-ring (C), cover (B), and cap screws (A). Tighten cap screws to specification.

Specification	
Pick-Up Screen Cover Cap Screw—Torque	23 N•m (17 lb-ft)

7. Fill transmission with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,000002B –19–31AUG04–1/1

Remove and Install Hydraulic Pump—5-Cylinder Engine

NOTE: Close all openings using caps and plugs.

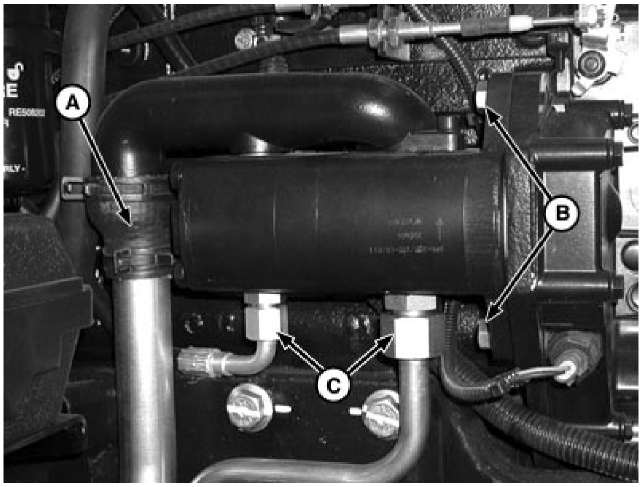
1. Disconnect suction line (A).
2. Disconnect outlet lines (C).
3. Remove mounting cap screws (B).
4. Remove hydraulic pump and gasket.
5. Make repairs as necessary. (See Disassemble and Inspect Hydraulic Pump—5-Cylinder Engine in Section 70, Group 05.)

IMPORTANT: Always use new gasket. Damaged or used gasket will leak.

6. Place new gasket on pump flange. Install hydraulic pump on engine.
7. Install mounting cap screws (B). Tighten to specification.

Specification	
Hydraulic Pump Mounting Cap Screw—5-Cylinder Engine—Torque	125 N•m (92 lb-ft)

8. Connect outlet lines (C).
9. Connect suction line (A).
10. Start engine and operate machine hydraulics. Check and adjust transmission/hydraulic oil level.

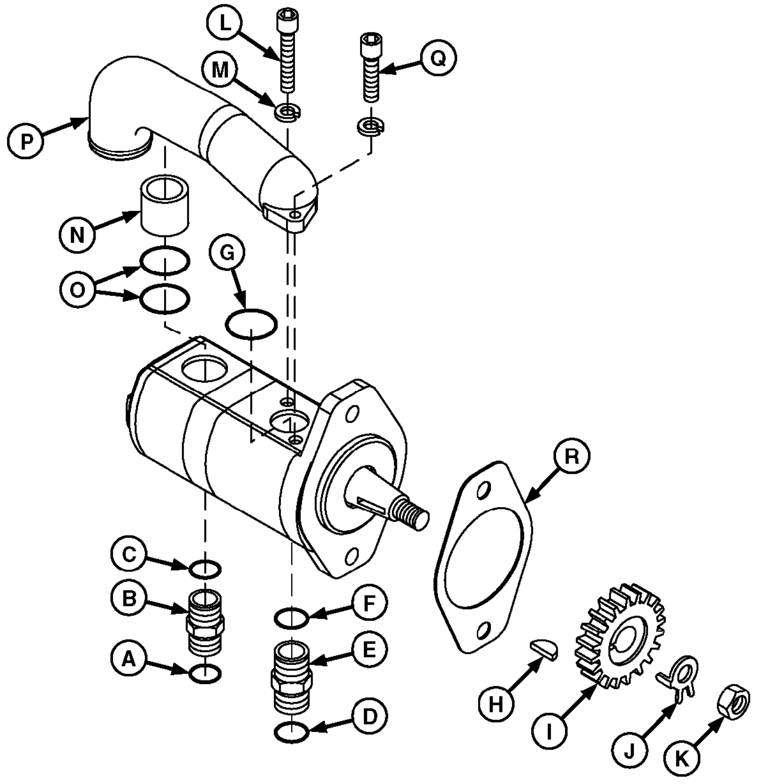


LV10187 –UN–31AUG04

A—Suction Line
B—Mounting Cap Screw (2 used)
C—Outlet Lines

JG31785,000002F –19–31AUG04–1/1

Remove Hydraulic Pump External Components—5-Cylinder Engine



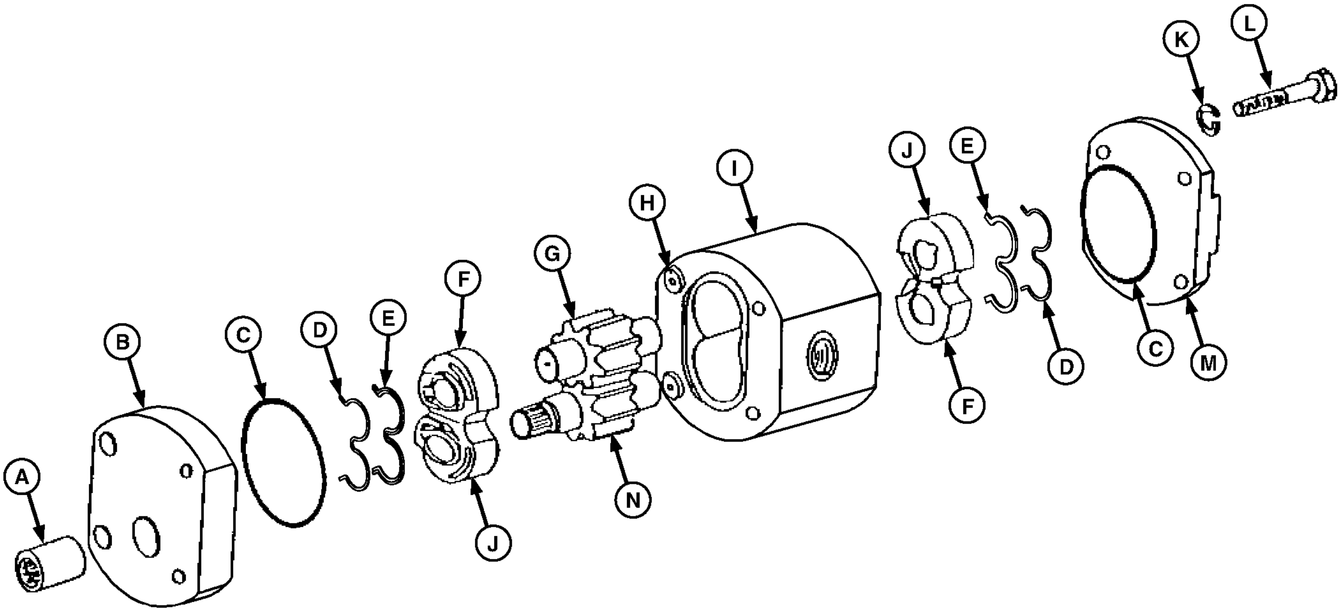
LV10222 –UN–22SEP04

A—O-Ring
B—Rear Fitting
C—O-Ring
D—O-Ring
E—Front Fitting
F—O-Ring
G—O-Ring
H—Woodruff Key
I—Gear
J—Tab Washer
K—Nut
L—Socket Head Cap Screw
M—Lock Washer (2 used)
N—Tube
O—O-Ring (2 used)
P—Manifold
Q—Socket Head Cap Screw
R—Gasket

1. Remove manifold (P) and tube (N). Remove O-rings (G and O).
2. Flatten tabs of tab washer (J) with hammer and punch.
3. Remove nut (K) and tab washer (J).
4. Remove gear (I) using a two-jaw puller.
5. Remove Woodruff key (H).
6. Remove fittings (B and E) and O-rings (A, C, D, and F).
7. Remove gasket (R).

JG31785,0000030 –19–31AUG04–1/1

Disassemble and Inspect Hydraulic Pump—5-Cylinder Engine



Rear Pump

A—Coupling
B—Plate
C—Body Seal (2 used)
D—Packing Ring (2 used)
E—O-Ring Seal (2 used)
F—Bushing (2 used)
G—Driven Gear
H—Dowel (2 used)
I—Housing
J—Bushing (2 used)
K—Lock Washer (4 used)
L—Cap Screw (4 used)
M—End Plate
N—Drive Gear

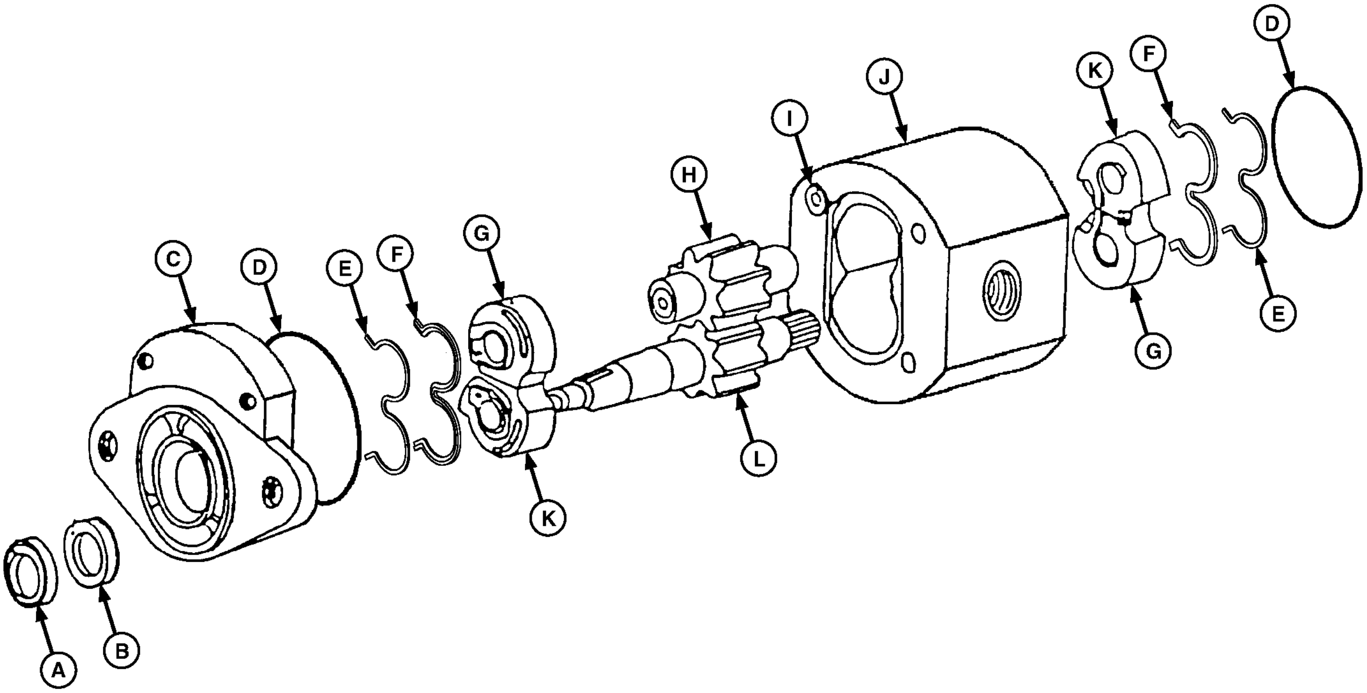
NOTE: Hydraulic pump components are not serviceable. Replace complete pump if any part, other than seals, is worn or damaged.

1. Thoroughly clean and dry outside of pump.
2. Mark or number pump sections to aid during assembly.

IMPORTANT: Separate pump sections carefully. Do not allow parts to fall out. Keep individual pump components together as matched sets.

3. Mount pump in a vise and remove cap screws (L).
4. Remove end plate (M) and parts (C, D, and E).
5. Mark teeth of pump gears (G and N) to aid during assembly.
6. Remove remaining parts of rear pump. If bushings (F and J) do not come out easily, push on shaft of drive gear (N).
7. Clean and dry parts. Inspect parts for wear or damage. Replace complete pump if necessary.

Continued on next page



Front Pump

A—Oil Seal
B—Oil Seal
C—Mounting Flange
D—Body Seal (2 used)
E—Packing Ring (2 used)
F—O-Ring Seal (2 used)
G—Bushing (2 used)
H—Driven Gear
I—Dowel (2 used)
J—Housing
K—Bushing (2 used)
L—Drive Gear

8. Separate mounting flange (C) from housing (J).

9. Remove parts (D, E, and F).

10. Mark teeth of pump gears (H and L) to aid during assembly.

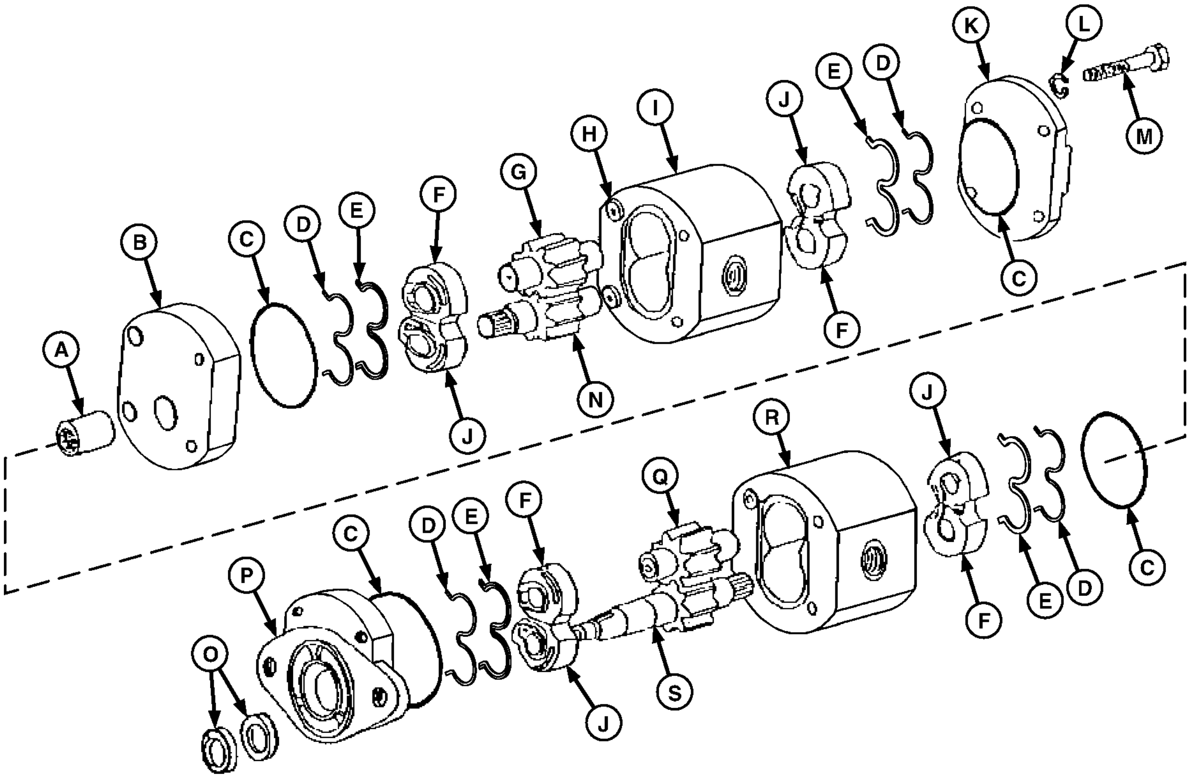
11. Remove remaining parts of front pump. If bushings (G and K) do not come out easily, push on shaft of drive gear (L).

IMPORTANT: Always replace seals. Damaged or used seals will leak.

12. Remove seals (A and B).

13. Clean and dry parts. Inspect parts for wear or damage. Replace complete pump if necessary.

Assemble Hydraulic Pump—5-Cylinder Engine



A—Coupling
B—Plate
C—Body Seal (4 used)
D—Packing Ring (4 used)
E—O-Ring Seal (4 used)
F—Bushing (4 used)
G—Driven Gear
H—Dowel (4 used)
I—Housing
J—Bushing (4 used)
K—End Plate
L—Lock Washer (4 used)
M—Cap Screw (4 used)
N—Drive Gear
O—Oil Seals
P—Mounting Flange
Q—Driven Gear
R—Housing
S—Drive Gear

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak. Apply clean hydraulic oil to all internal parts before assembly. Premature pump failure can result if pump is assembled dry.

NOTE: Install seals with lips facing away from each other.

1. Apply multipurpose grease to inside lips of oil seals (O). Install oil seals (O) using a bearing, bushing, and seal driver set. Install inner seal with lips toward pump gears. Install outer seal with lips away from pump gears.

2. Assemble pump sections with new seals and O-rings, aligning all marks made during disassembly.

Continued on next page

JG31785,0000032 –19–31AUG04–1/2

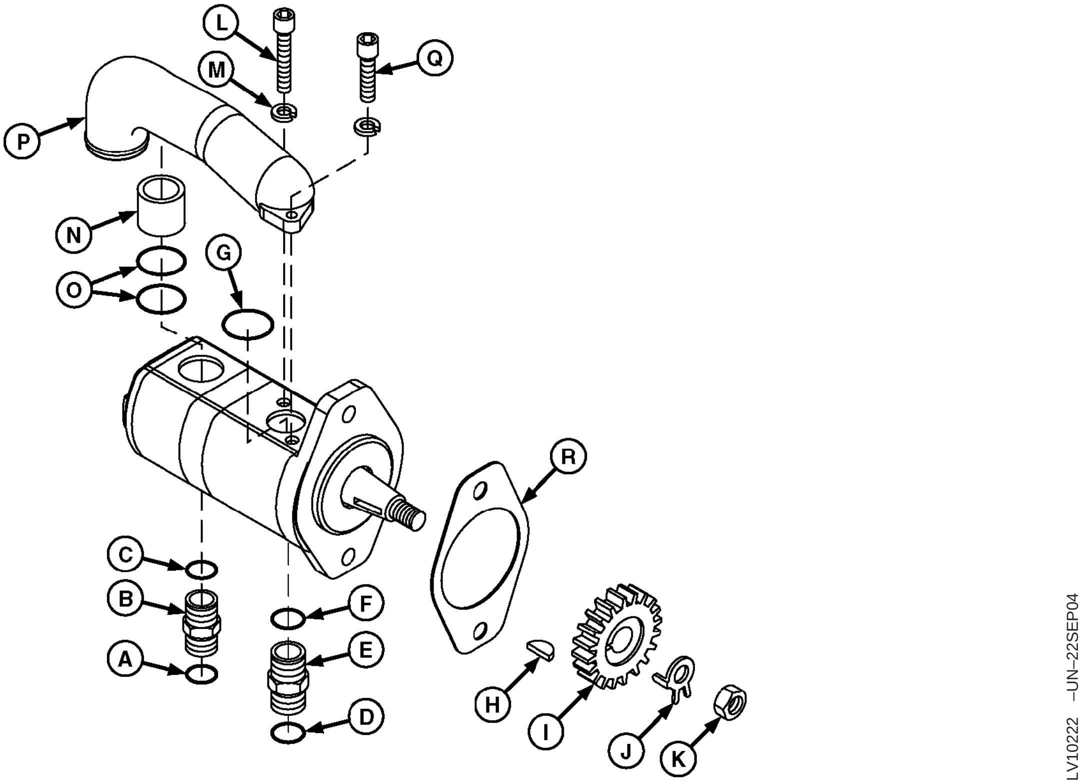
IMPORTANT: Make sure that pump shaft can be turned with a pair of 6 in. pliers when tightening bolts. A seized shaft indicates misaligned components. Disassemble pump to determine cause.

3. Tighten cap screws (M) to specification.

Specification	
Hydraulic Pump Body Cap Screw—5-Cylinder Engine—Torque	48 N•m (35 lb-ft)

JG31785,0000032 –19–31AUG04–2/2

Install Hydraulic Pump External Components—5-Cylinder Engine



A—O-Ring
B—Rear Fitting
C—O-Ring
D—O-Ring
E—Front Fitting
F—O-Ring
G—O-Ring
H—Woodruff Key
I—Gear
J—Tab Washer
K—Nut
L—Socket Head Cap Screw
M—Lock Washer (2 used)
N—Tube
O—O-Ring (2 used)
P—Manifold
Q—Socket Head Cap Screw
R—Gasket

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

1. Install new O-rings (A, C, D and F).

2. Install fittings (B and E). Tighten fittings to specification.

Specification	
Hydraulic Pump Rear Outlet Fitting—5-Cylinder Engine—Torque	28 N•m (21 lb-ft)
Hydraulic Pump Front Outlet Fitting—5-Cylinder Engine—Torque	46 N•m (34 lb-ft)

3. Install gasket (R).

4. Install parts (H—K). Tighten nut (K) to specification. Bend tabs of tab washer (J) up against nut.

Specification	
Gear Retaining Nut—5-Cylinder Engine—Torque	50 N•m (37 lb-ft)

5. Install new O-rings (O) and tube (N).

6. Install new O-ring (G) and manifold (P).

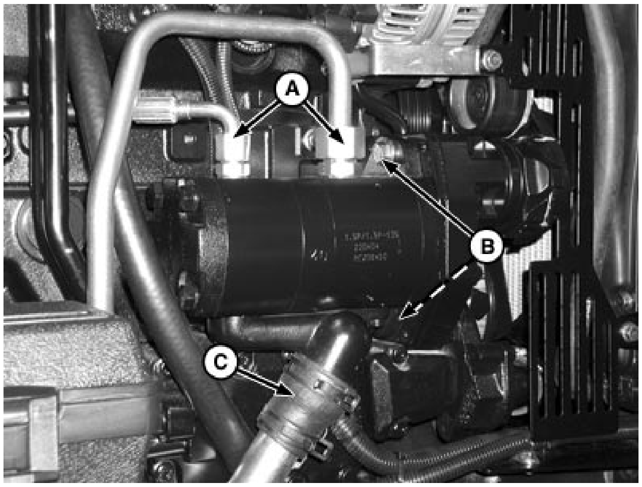
7. Install two lock washers (M) and socket head cap screws (L and Q). Tighten socket head cap screws to specifications.

Specification	
Hydraulic Pump Inlet Manifold Socket Head Cap Screws—5-Cylinder Engine—Torque	25 N•m (18 lb-ft)

JG31785,0000033 –19–31AUG04–1/1

Remove and Install Hydraulic Pump—4-Cylinder Engine

NOTE: Close all openings with caps and plugs.



A—Outlet Lines
B—Cap Screw (2 used)
C—Suction Line

1. Disconnect hydraulic outlet lines (A) and suction line (C).
2. Remove two cap screws (B).
3. Remove hydraulic pump and gasket.
4. Make repairs as necessary. (See Disassemble and Inspect Hydraulic Pump—4-Cylinder Engine in Section 70, Group 05.)
5. Place new gasket on pump flange. Install pump on engine.
6. Install cap screws (B) and tighten to specification.

Specification	
Hydraulic Pump Mounting Cap Screw—4-Cylinder Engine—Torque	125 N•m (92 lb-ft)

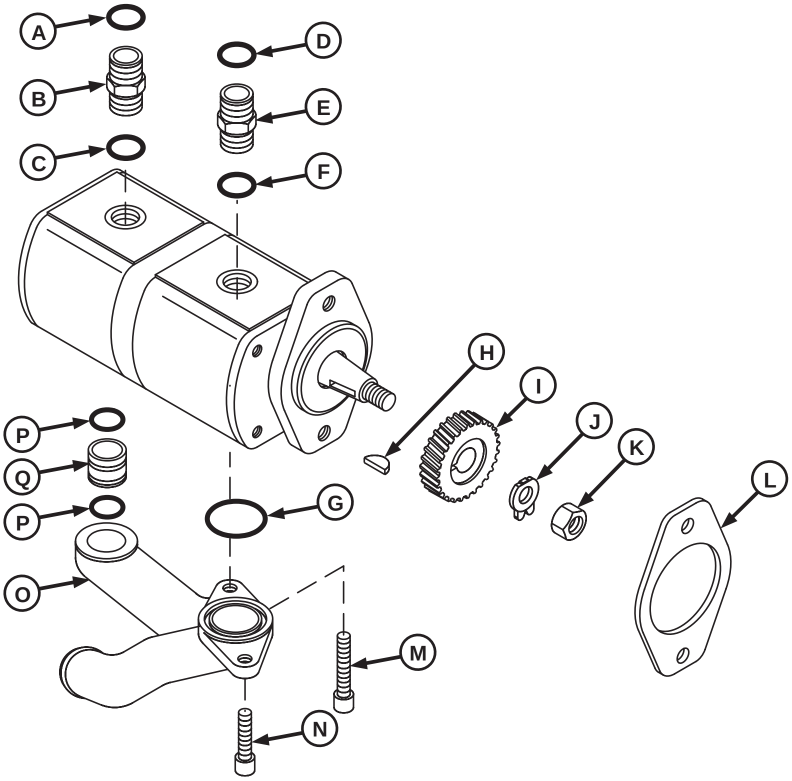
IMPORTANT: Always use new O-rings. Damaged or used O-rings may leak.

7. Connect outlet lines (A) and suction line (C).
8. Start engine and operate machine hydraulics. Check for leaks and adjust transmission/hydraulic oil level.

70
05
11

JG31785,0000034 –19–31AUG04–1/1

Remove Hydraulic Pump External Components—4-Cylinder Engine



LV10226 –UN–31AUG04

A—O-Ring
B—Rear Fitting
C—O-Ring
D—O-Ring
E—Front Fitting
F—O-Ring
G—O-Ring
H—Woodruff Key
I—Gear
J—Tab Washer
K—Nut
L— Gasket
M—Socket Head Cap Screw
N—Socket Head Cap Screw
O—Manifold
P—O-Ring (2 used)
Q—Tube

1. Remove manifold (O) and tube (Q). Remove O-rings (G and P).

2. Flatten tabs of tab washer (J) with hammer and punch.

3. Remove nut (K) and tab washer (J).

4. Remove gear (I) using a two-jaw puller.

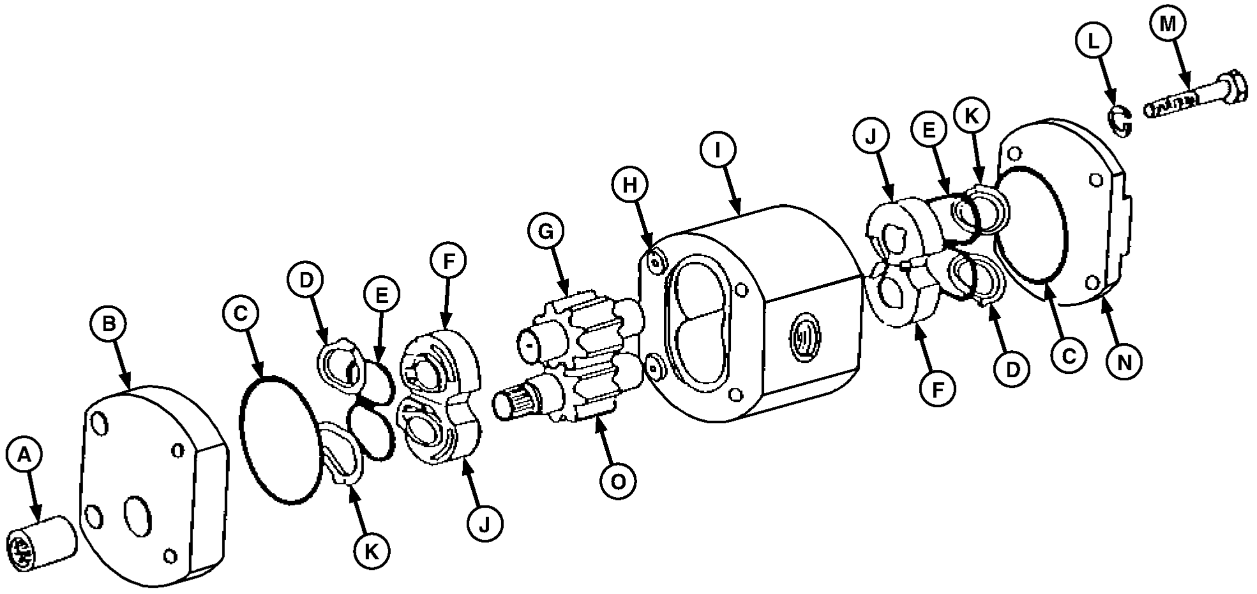
5. Remove Woodruff key (H).

6. Remove fittings (B and E) and O-rings (A, C, D, and F).

7. Remove gasket (L).

JG31785,0000035 –19–31AUG04–1/1

Disassemble and Inspect Hydraulic Pump—4-Cylinder Engine



LV10225 –UN–31AUG04

Rear Pump

A—Coupling
B—Plate
C—Body Seal (2 used)
D—Packing Ring (2 used)
E—O-Ring Seal (2 used)
F—Bushing (2 used)
G—Driven Gear
H—Dowel (2 used)
I—Housing
J—Bushing (2 used)
K—Packing Ring (2 used)
L—Lock Washer (4 used)
M—Cap Screw (4 used)
N—End Plate
O—Drive Gear

NOTE: Hydraulic pump components are not serviceable. Replace complete pump if any part, other than seals, is worn or damaged.

1. Thoroughly clean and dry outside of pump.

2. Mark or number pump sections to aid assembly.

IMPORTANT: Separate pump sections carefully. Do not allow parts to fall out. Keep individual pump components together as matched sets.

3. Mount pump in a vise and remove cap screws (M).

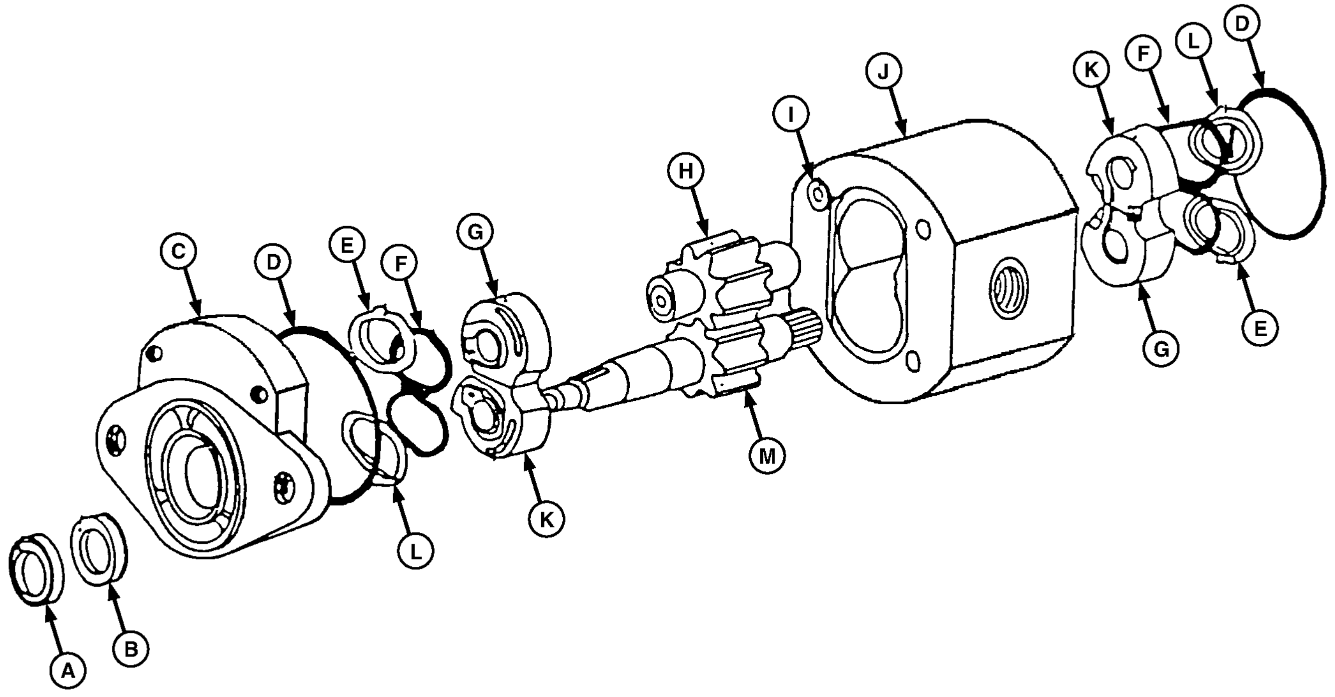
4. Remove end plate (N) and parts (C, D, E, and K).

5. Mark teeth of pump gears (G and O) to aid reassembly.

6. Remove remaining parts of rear pump. If bushings (F and J) do not come out easily, push on shaft of drive gear (O).

7. Clean and dry parts. Inspect parts for wear or damage. Replace complete pump if necessary.

Continued on next page



Front Pump

A—Oil Seal
B—Oil Seal
C—Mounting Flange
D—Body Seal (2 used)
E—Packing Ring (2 used)
F—O-Ring Seal (2 used)
G—Bushing (2 used)
H—Driven Gear
I—Dowel (2 used)
J—Housing
K—Bushing (2 used)
L—Packing Ring (2 used)
M—Drive Gear

8. Separate mounting flange (C) from housing (J).

9. Remove parts (D, E, F, and L).

10. Mark teeth of pump gears (H and M) to aid reassembly.

11. Remove remaining parts of front pump. If bushings (G and K) do not come out easily, push on shaft of drive gear (M).

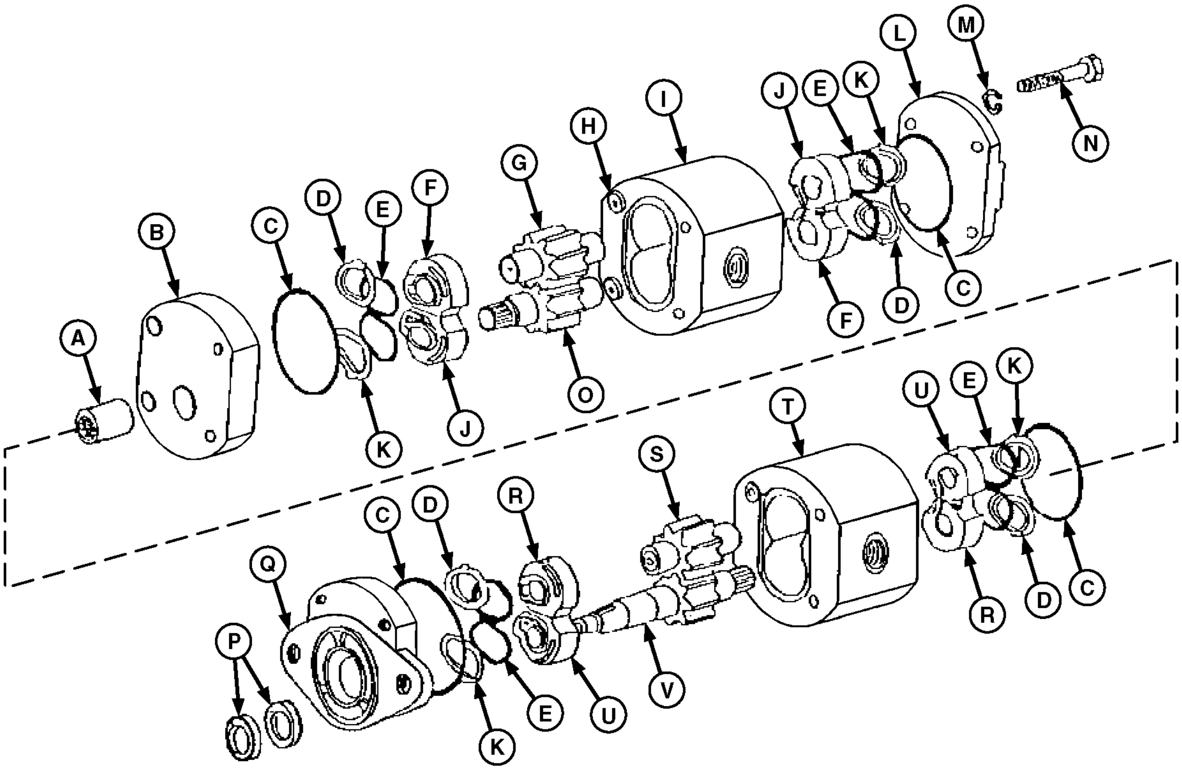
IMPORTANT: Always replace seals. Damaged or used seals will leak.

12. Remove oil seals (A and B).

13. Clean and dry parts. Inspect parts for wear or damage. Replace complete pump if necessary.

JG31785,0000036 –19–31AUG04–2/2

Assemble Hydraulic Pump—4-Cylinder Engine



LV10223 –UN–31AUG04

A—Coupling
B—Plate
C—Body Seal (4 used)
D—Packing Ring (4 used)
E—O-Ring Seal (4 used)
F—Bushing (2 used)
G—Driven Gear
H—Dowel (4 used)
I—Housing
J—Bushing (2 used)
K—Packing Ring (4 used)
L—End Plate
M—Lock Washer (4 used)
N—Cap Screw (4 used)
O—Drive Gear
P—Oil Seals
Q—Mounting Flange
R—Bushing (2 used)
S—Driven Gear
T—Housing
U—Bushing (2 used)
V—Drive Gear

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly. Premature pump failure can result if pump is assembled dry.

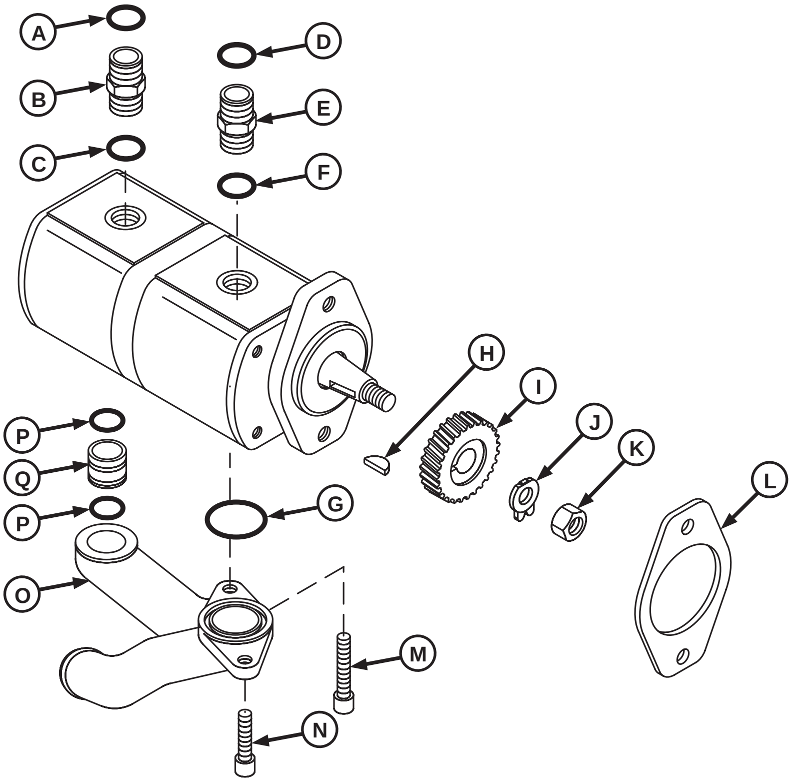
1. Apply multipurpose grease to inside lips of oil seals (P). Install oil seals (P) using a bushing, bearing, and seal driver set.
2. Assemble pump sections with new seals and O-rings, aligning all marks made during disassembly.

IMPORTANT: Make sure that pump shaft can be turned with a pair of 6-in. pliers when tightening bolts. A seized shaft indicates misaligned components. Disassemble pump to determine cause.

3. Tighten cap screws (N) to specification.

Specification	
Hydraulic Pump Body Cap Screw—4-Cylinder Engine—Torque	68 N•m (50 lb-ft)

Install Hydraulic Pump External Components—4-Cylinder Engine



A—O-Ring
B—Rear Fitting
C—O-Ring
D—O-Ring
E—Front Fitting
F—O-Ring
G—O-Ring
H—Woodruff Key
I—Gear
J—Tab Washer
K—Nut
L—Gasket
M—Socket Head Cap Screw
N—Socket Head Cap Screw
O—Manifold
P—O-Ring (2 used)
Q—Tube

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

1. Install new O-rings (A, C, D, and F).

2. Install fittings (B and E). Tighten fittings to specification.

Specification	
Hydraulic Pump Rear Outlet Fitting—4-Cylinder Engine—Torque	28 N•m (21 lb-ft)
Hydraulic Pump Front Outlet Fitting—4-Cylinder Engine—Torque	46 N•m (34 lb-ft)

3. Install parts (H—K). Tighten nut (K) to specification. Bend tabs of washer (J) up against nut.

Specification	
Hydraulic Pump Gear Nut—4-Cylinder Engine—Torque	90 N•m (66 lb-ft)

4. Install new O-rings (P) and tube (Q).

5. Install new O-ring (G) and manifold (O).

6. Install socket head cap screws (M and N). Tighten socket head cap screws to specifications.

Specification	
Hydraulic Pump Inlet Manifold Socket Head Cap Screws—4-Cylinder Engine—Torque	25 N•m (18 lb-ft)

JG31785,0000038 –19–31AUG04–1/1

Remove and Install Hydraulic Oil Filter/Manifold

1. Drain transmission/hydraulic oil.

NOTE: Close all openings using caps and plugs.

2. Disconnect wire connector (A).
3. Disconnect hose (B).

NOTE: Line bracket will vary depending on tractor options.

4. Remove cap screws (D and F), and line bracket (E).
5. Slide filter/manifold to rear and remove from suction line (C).

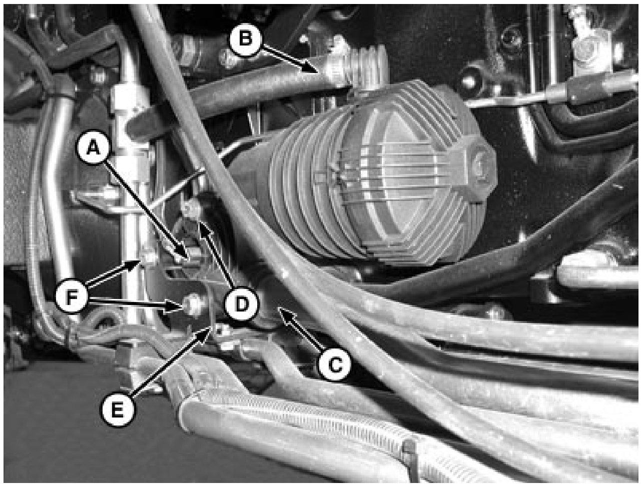
IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

6. Install filter/manifold assembly.
7. Install line bracket (E). Tighten cap screws (D and F) to specification.

Specification

Hydraulic Oil Filter/Manifold Cap Screw—Torque .... 55 N•m (41 lb-ft)

8. Connect hose (B) and wire connector (A).
9. Fill transmission with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

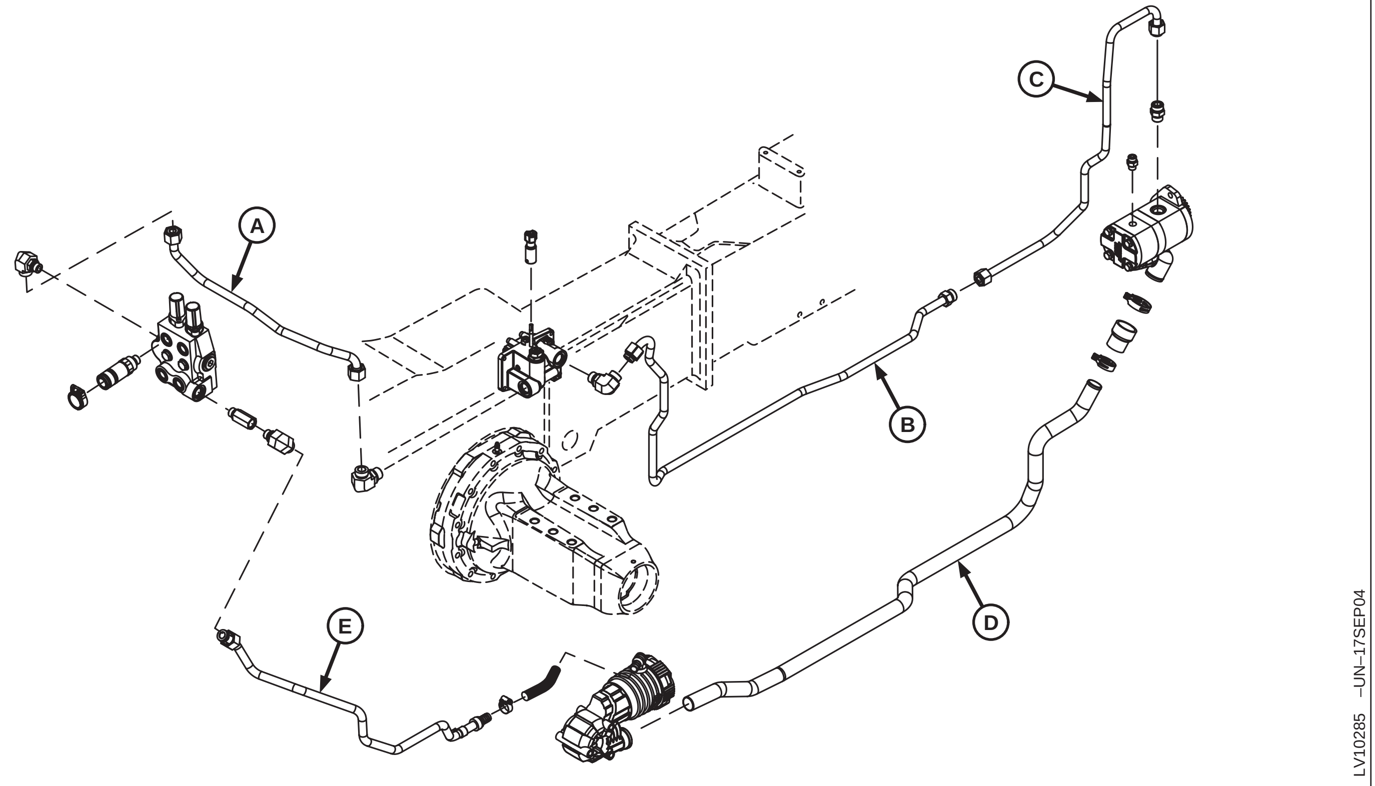


LV10188 –UN–31AUG04

A—Wire Connector
B—Hose
C—Suction Line
D—Cap Screw
E—Line Bracket
F—Cap Screw (2 used)

JG31785,000005F –19–31AUG04–1/1

Inspect and Replace Hydraulic Supply/Return Lines—4-Cylinder Tractors (With SCV)



A—Pressure Line
B—Supply Line (Rear)
C—Supply Line (Front)
D—Suction Line
E—Return Line

1. Remove right rear wheel and fender.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines or hoses is necessary, drain transmission/hydraulic oil.

2. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

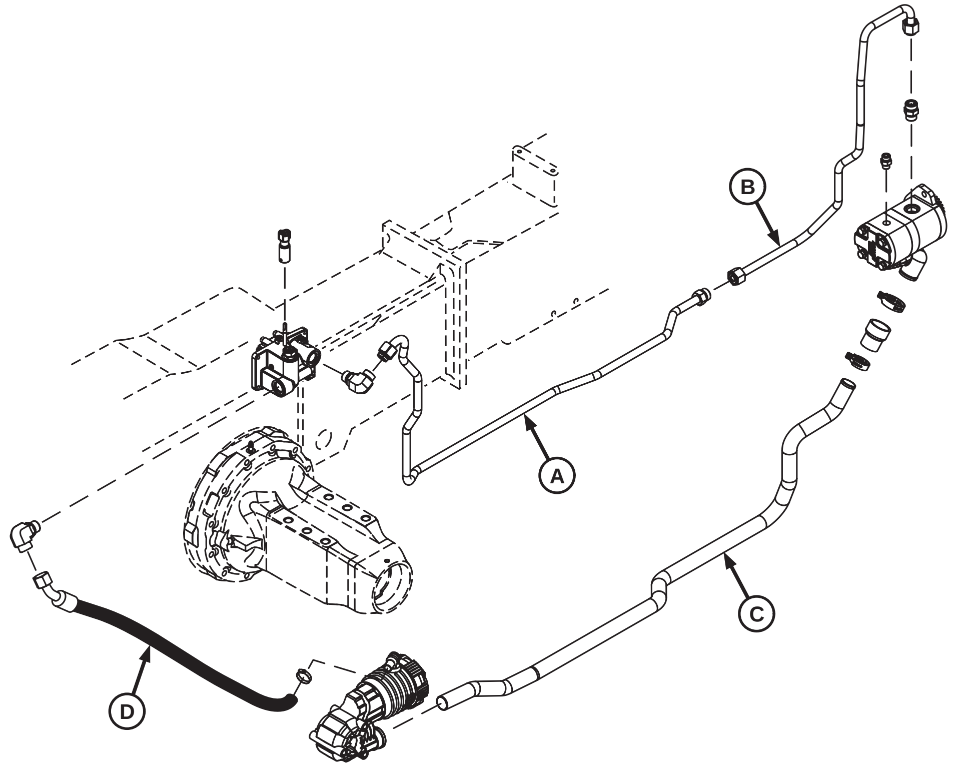
3. Install fender and wheel. Tighten wheel cap screws to specification.

Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque .... 600 N•m (442 lb-ft)

4. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

Inspect and Replace Hydraulic Supply/Return Lines—4-Cylinder Tractors (Without SCV)



LV10286 –UN–16SEP04

A—Supply Line (Rear) **B—Supply Line (Front)** **C—Suction Line** **D—Return Line**

1. Remove right rear wheel and fender.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines is necessary, drain transmission/hydraulic oil.

2. Inspect hydraulic lines for wear or damage. Replace as necessary.

3. Install wheel and fender. Tighten wheel cap screws to specification.

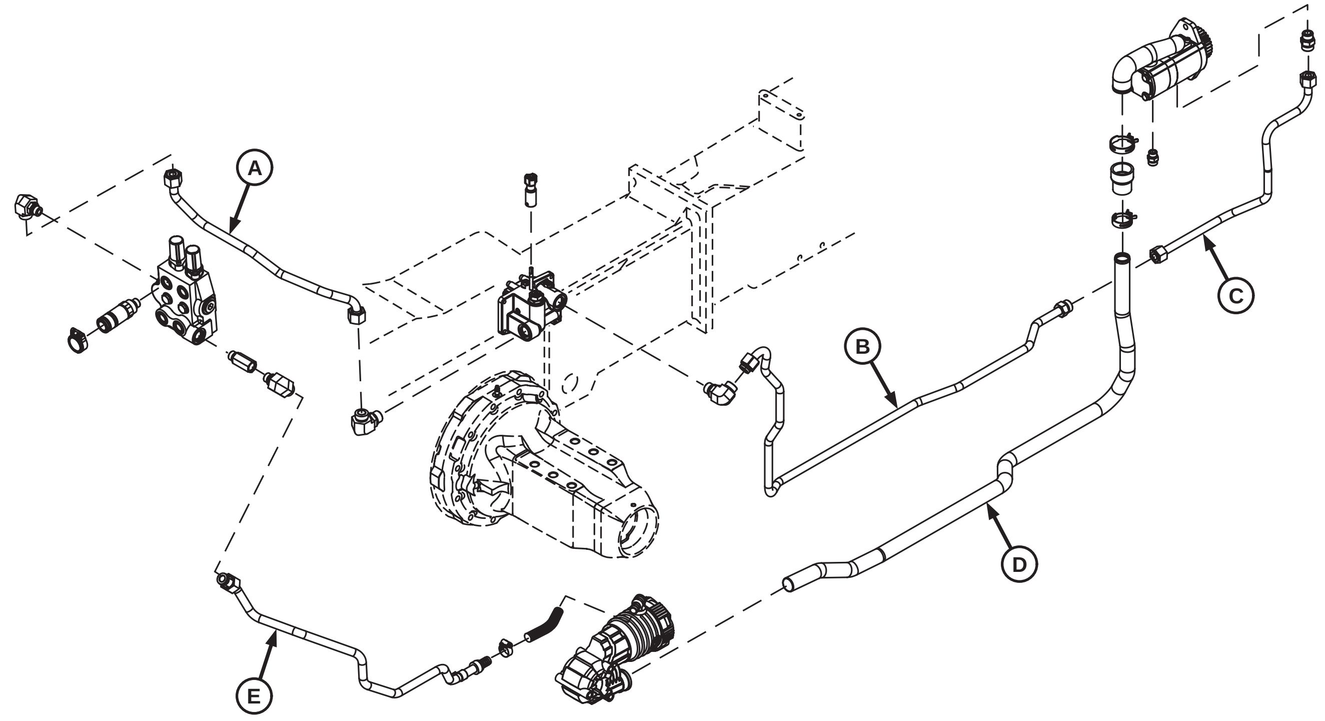
Specification

Rear Wheel-to-Axle Cap Screw M20—Torque	600 N•m (442 lb-ft)

4. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000075 –19–02SEP04–1/1

Inspect and Replace Hydraulic Supply/Return Lines—5-Cylinder Tractors (With SCV)



A—Pressure Line
B—Supply Line (Rear)
C—Supply Line (Front)
D—Suction Line
E—Return Line

70
05
20

1. Remove right rear wheel and fender.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines is necessary, drain transmission/hydraulic oil.

2. Inspect hydraulic lines for wear or damage. Replace as necessary.

3. Install wheel and fender. Tighten wheel cap screws to specification.

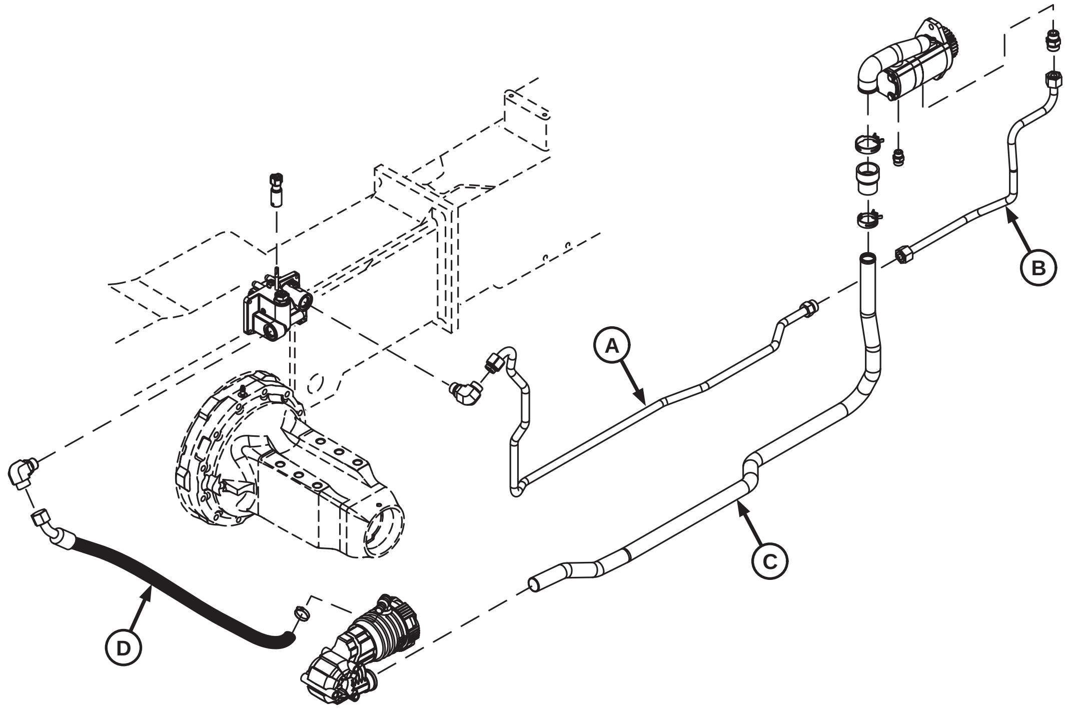
Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque .... 600 N•m (442 lb-ft)

4. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000076 –19–02SEP04–1/1

Inspect and Replace Hydraulic Supply/Return Lines—5-Cylinder Tractors (Without SCV)



A—Supply Line (Rear) **B—Supply Line (Front)** **C—Suction Line** **D—Return Line**

1. Remove right rear wheel and fender.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines is necessary, drain transmission/hydraulic oil.

2. Inspect hydraulic lines for wear or damage. Replace as necessary.
3. Install wheel and fender. Tighten wheel cap screws to specification.

Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque .... 600 N•m (442 lb-ft)

4. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000078 –19–02SEP04–1/1

Group 06
Hydraulic Oil Cooler

Remove, Inspect, and Install Hydraulic Oil Cooler

1. Disconnect negative (—) battery cable first and then positive (+) battery cable.

NOTE: *On tractors equipped with air conditioning the hydraulic oil cooler is combined with the air conditioning condenser as one unit. The air conditioning condenser must be properly disconnected. (See Remove, Inspect, and Install Air Conditioning Condenser in Section 90, Group 20.)*

2. Remove cap screw (B) on both sides of hydraulic oil cooler.

3. Remove cap screw (C) on both sides of hydraulic oil cooler.

NOTE: *Close all openings using caps and plugs. Tag or label hydraulic oil cooler lines before disconnecting to aid during installation.*

4. Disconnect two hydraulic lines (A).

5. Remove hydraulic oil cooler (D).

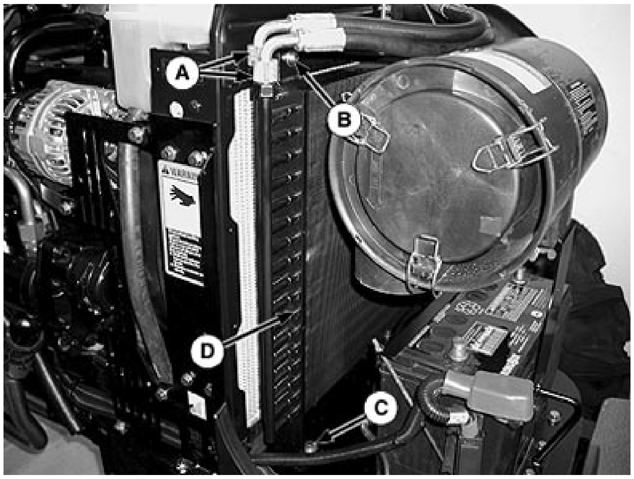
6. Inspect hydraulic oil cooler for bent fins, cracks, and damaged seams. Repair as necessary.

CAUTION: Reduce compressed air to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips or debris and wear personal protective equipment including eye protection.

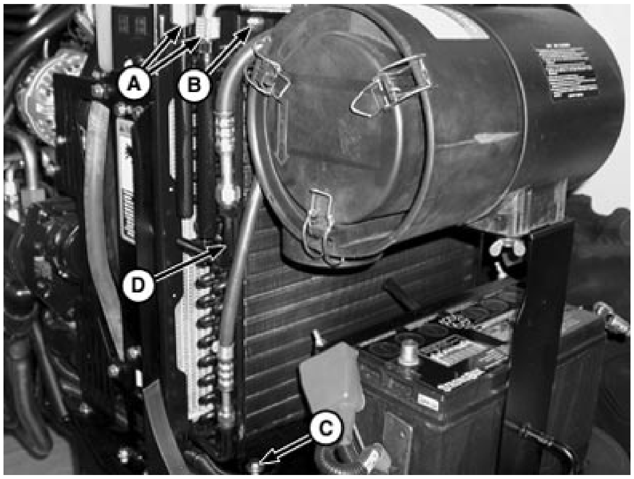
7. Install oil cooler using two cap screws (C).

NOTE: *To avoid damage to condenser/oil cooler, always use a backup wrench when loosening or tightening lines at condenser/oil cooler.*

8. Install two cap screws (B) and connect hydraulic lines (A).



Hydraulic Oil Cooler Without Air Conditioning



Hydraulic Oil Cooler With Air Conditioning

A—Hydraulic Lines
B—Cap Screw (2 used)
C—Cap Screw (2 used)
D—Hydraulic Oil Cooler

Continued on next page

NOTE: Tractors equipped with cab: Connect A/C condenser. (See Remove, Inspect, and Install Air Conditioning Condenser in Section 90, Group 20.)

9. Connect positive (+) battery cable.

10. Connect negative (—) battery cable.

11. Start engine and operate tractor hydraulics system. Check for leaks. Check and adjust transmission/hydraulic oil level.

Service Parts Kits

The following kits are available through your parts catalog:

Mechanical Rockshaft Control Valve Inlet Housing Seal Kit

Rockshaft Cylinder Seal Kit

Electro-Hydraulic Rockshaft Control Valve Seal Kit

OUO1026,000C35D –19–02SEP04–1/1

Other Material

Number	Name	Use
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to the following: rockshaft control valve-to-inlet housing socket head cap screws, inlet housing-to-rockshaft case cap screws and threads of hitch relief valve.
PM37509 (U.S.) PM38611 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cleans mating surfaces and reduces sealant curing time.
PM38657 (U.S.) PM38628 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Seals the following: EH rockshaft control valve to rockshaft case, rockshaft case to differential housing.
PM38654 (U.S.) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of SCV cable before tightening retaining nut

LOCTITE is a trademark of Loctite Corp.

JG31785,0000415 –19–18FEB05–1/1

Specifications

Item	Measurement	Specification
Main Relief Valve—Mechanical RCV	Torque	62 N•m (46 lb-ft)
Hitch Relief Valve—Mechanical RCV	Torque	62 N•m (46 lb-ft)
Load Sense Relief Valve	Torque	62 N•m (46 lb-ft)
Rockshaft Control Valve-to-Inlet Housing Socket Head Cap Screw	Torque	28 N•m (21 lb-ft)
RCV Inlet Housing Hydraulic Line Fitting	Torque	102 N•m (75 lb-ft)
RCV Inlet Housing Hydraulic Line Nut	Torque	69 N•m (51 lb-ft)
SCV Control Cable Steel Nut	Torque	25 N•m (221 lb-in.)
SCV Hydraulic Line Nut	Torque	69 N•m (51 lb-ft)
Rockshaft Control Valve Inlet Housing Cap Screws	Torque	30 N•m (22 lb-ft)
Compensator Valve Plug	Torque	45 N•m (33 lb-ft)
Manual Override Valve Packing Nut	Torque	14 N•m (124 lb-in.)
Solenoid Valve Poppet	Torque	100 N•m (74 lb-ft)
Coil Retaining Nut	Torque	2.3 N•m (20 lb-in.)
System Relief Valve	Torque	81 N•m (60 lb-ft)
Load Check Valve Plug	Torque	47 N•m (35 lb-ft)
Load Sense Relief Valve Jam Nut	Torque	9.5 N•m (84 lb-in.)
Work Port Relief Valve	Torque	34 N•m (25 lb-ft)
Load Sense Bleed Orifice	Torque	9.5 N•m (84 lb-in.)
Inlet Housing Mounting Cap Screw	Torque	35 N•m (26 lb-ft)
Electro-Hydraulic Rockshaft Control Valve-to-Rockshaft Case Cap Screws	Torque	30 N•m (22 lb-ft)

Continued on next page

Item	**Measurement**	**Specification**
Rockshaft Case-to-Differential Housing Cap Screws	Torque	125 N•m (92 lb-ft)
Rockshaft Bushing Outer Edge-to-Edge of Bore	Distance	7 mm (0.283 in.)
Draft Sensing Support Mounting Socket Head Cap Screw	Torque	375 N•m (277 lb-ft)

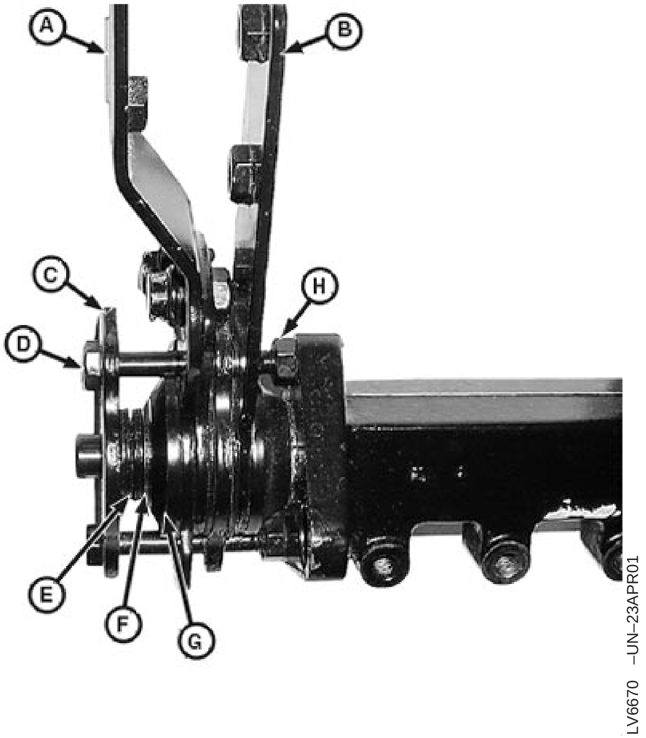
OUO1026,0001D58 –19–06OCT04–2/2

Inspect and Repair Rockshaft Control Assembly—Straddle Mount

1. Remove rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount in Section 70, Group 10.)

2. Loosen nuts (H).

3. Remove parts (C—H).



A—Position Control Lever
B—Draft Sensing Lever
C—Alignment Plate
D—Cap Screw (2 used)
E—Spring Washer (4 used)
F—Washer
G—Spacer
H—Jam Nut (2 used)

Continued on next page

OUO1026,000C353 –19–02SEP04–1/5

4. Remove inlet housing. (See Remove and Install Rockshaft Control Valve—Straddle Mount in Section 70, Group 10.)

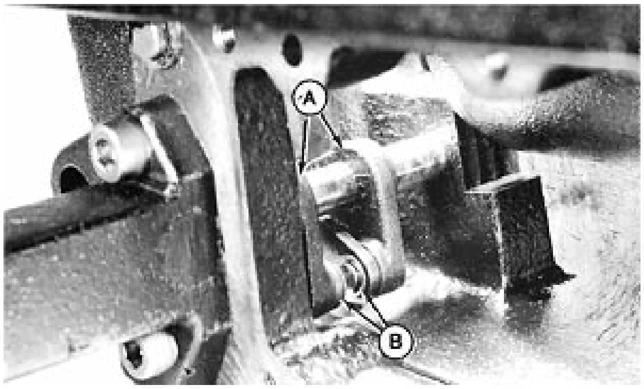
NOTE: To access links inside rockshaft case, rockshaft case must be placed upside down.

5. Turn rockshaft case upside down.

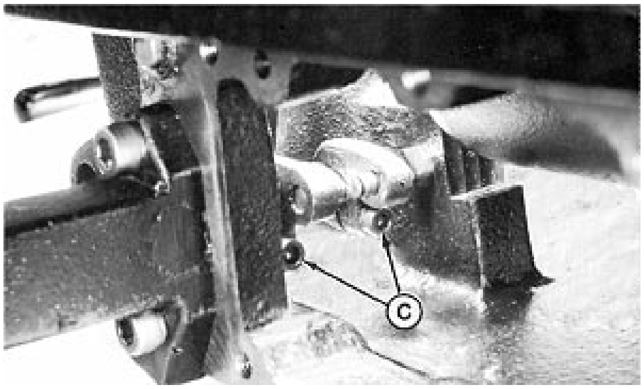
6. Remove E-clips (B). Disconnect links from levers (A).

7. Rotate levers and remove socket head cap screws (C).

A—Lever
B—E-Clip
C—Socket Head Cap Screw



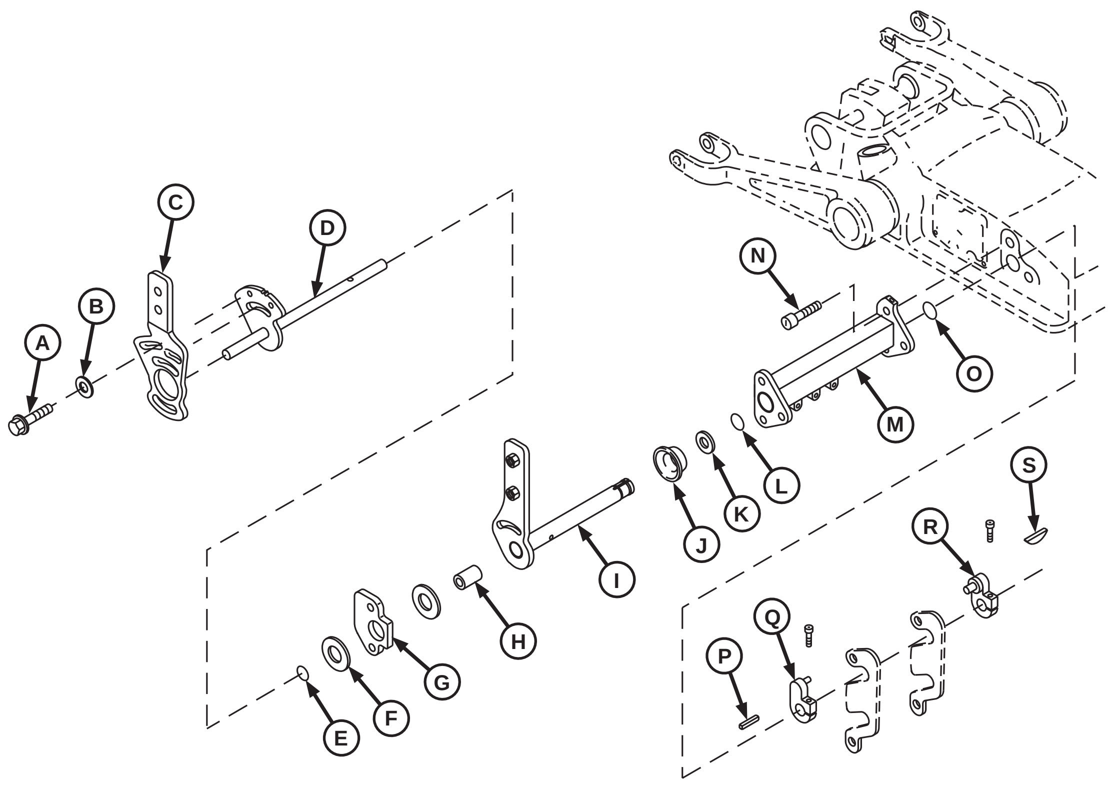
LV209 –UN–28FEB92



LV210 –UN–28FEB92

Continued on next page

OUO1026,000C353 –19–02SEP04–2/5



A—Cap Screw (2 used)
B—Washer (2 used)
C—Alignment Plate
D—Position Control Shaft
E—O-Ring
F—Friction Disk (2 used)
G—Alignment Plate
H—Bushing
I—Draft Sensing Shaft
J—Spacer
K—Washer
L—O-Ring
M—Support
N—Socket Head Cap Screw (2 used)
O—O-Ring
P—Key
Q—Draft Sensing Actuating Lever
R—Position Control Actuating Lever
S—Woodruff Key

NOTE: Levers (Q and R) are keyed to shafts (I and D), respectively, inside rockshaft case. Levers and keys (P and S) will drop into case when lever assembly is removed.

8. Remove parts (A—S).

IMPORTANT: Always use new O-rings during assembly. Damaged or used O-rings will leak.

NOTE: Bushing (H) is press fit inside shaft (I).

9. Inspect all parts for wear or damage. Replace as necessary.
10. Install new O-rings (E, L, and O).
11. Apply multipurpose grease to shafts (D and I).
12. Install all parts.

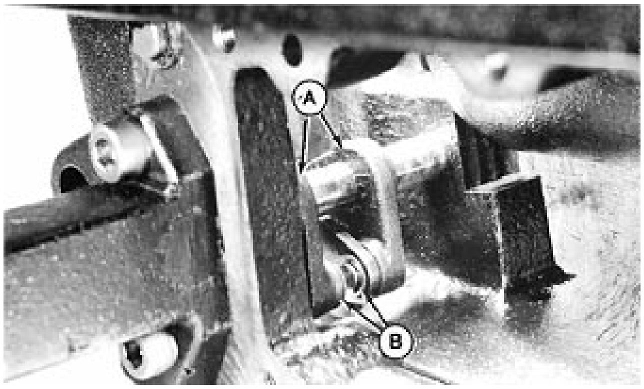
Continued on next page

13. Install and tighten socket head cap screws (C).

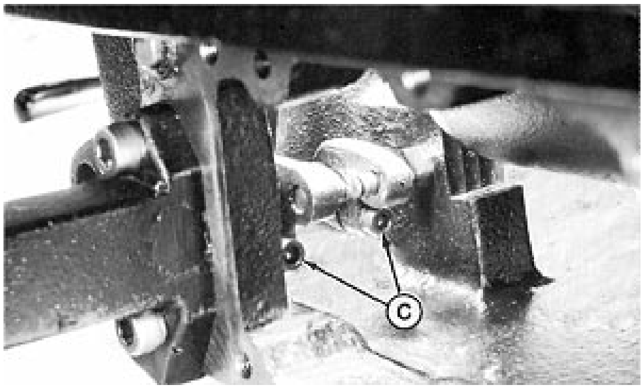
14. Connect links to levers (A) and install E-clips (B).

15. Install inlet housing. (See Remove and Install Rockshaft Control Valve—Straddle Mount in Section 70, Group 10.)

A—Lever
B—E-Clip
C—Socket Head Cap Screw



LV209 –UN–28FEB92



LV210 –UN–28FEB92

OUO1026,000C353 –19–02SEP04–4/5

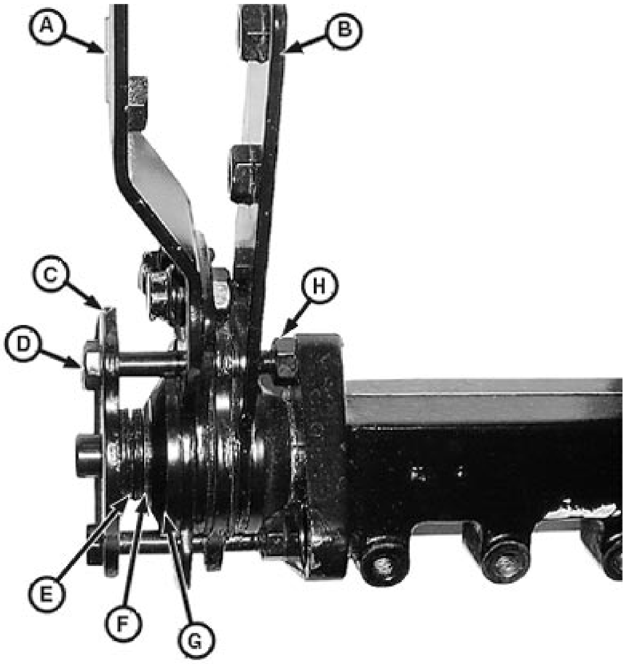
IMPORTANT: Each pair of spring washers (E) must be installed with concave sides facing each other.

16. Install parts (C—H).

17. Install rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount in Section 70, Group 10.)

18. Adjust rockshaft control lever friction. (See Reference 270-15-017, Rockshaft Lever Friction Adjustment (Mechanical Hitch) in TM2197 Section 270, Group 15.)

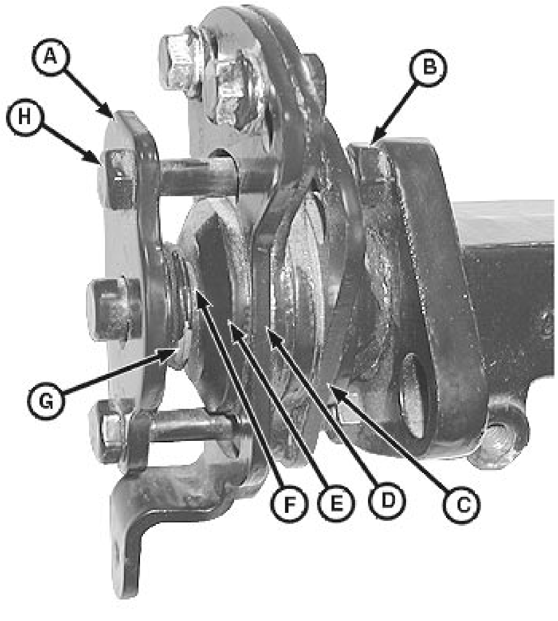
A—Position Control Lever
B—Draft Sensing Lever
C—Alignment Plate
D—Cap Screw (2 used)
E—Spring Washer (4 used)
F—Washer
G—Spacer
H—Jam Nut (2 used)



LV6670 –UN–23APR01

OUO1026,000C353 –19–02SEP04–5/5

Inspect and Repair Rockshaft Control Assembly—Isolated Open Operator Station and Cab Tractors



1. Remove rockshaft case. (See Remove and Install Rockshaft Case—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

2. Loosen jam nuts (B).

3. Remove parts (A—H).

A—Alignment Plate
B—Jam Nut (2 used)
C—Draft Sensing Lever
D—Position Control Lever
E—Spacer
F—Washer
G—Spring Washer (4 used)
H—Cap Screw (2 used)

OUO1026,000C35A –19–02SEP04–1/5

4. Remove inlet housing. (See Remove and Install Rockshaft Control Valve—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

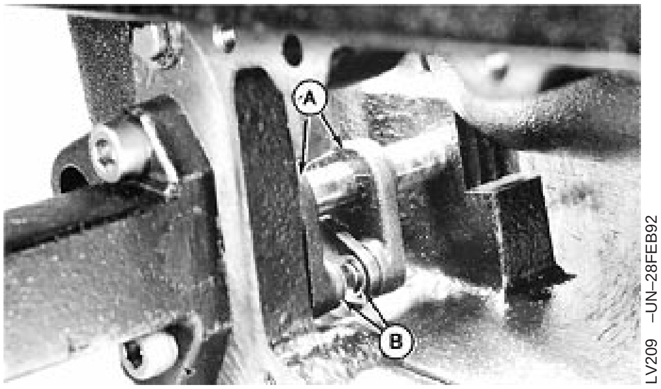
NOTE: To access links inside rockshaft case, rockshaft case must be placed upside down.

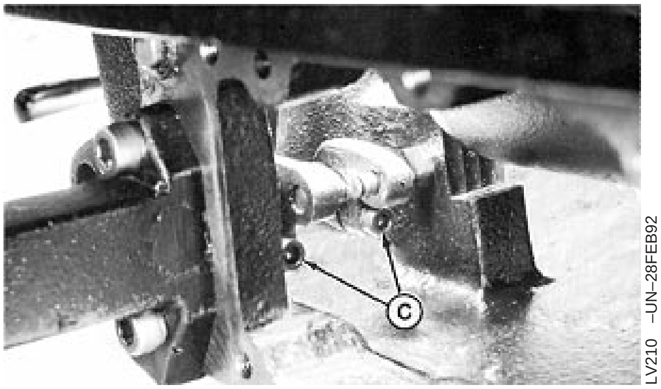
5. Turn rockshaft case upside down.

6. Remove E-clips (B). Disconnect links from levers (A).

7. Rotate levers and remove socket head cap screws (C).

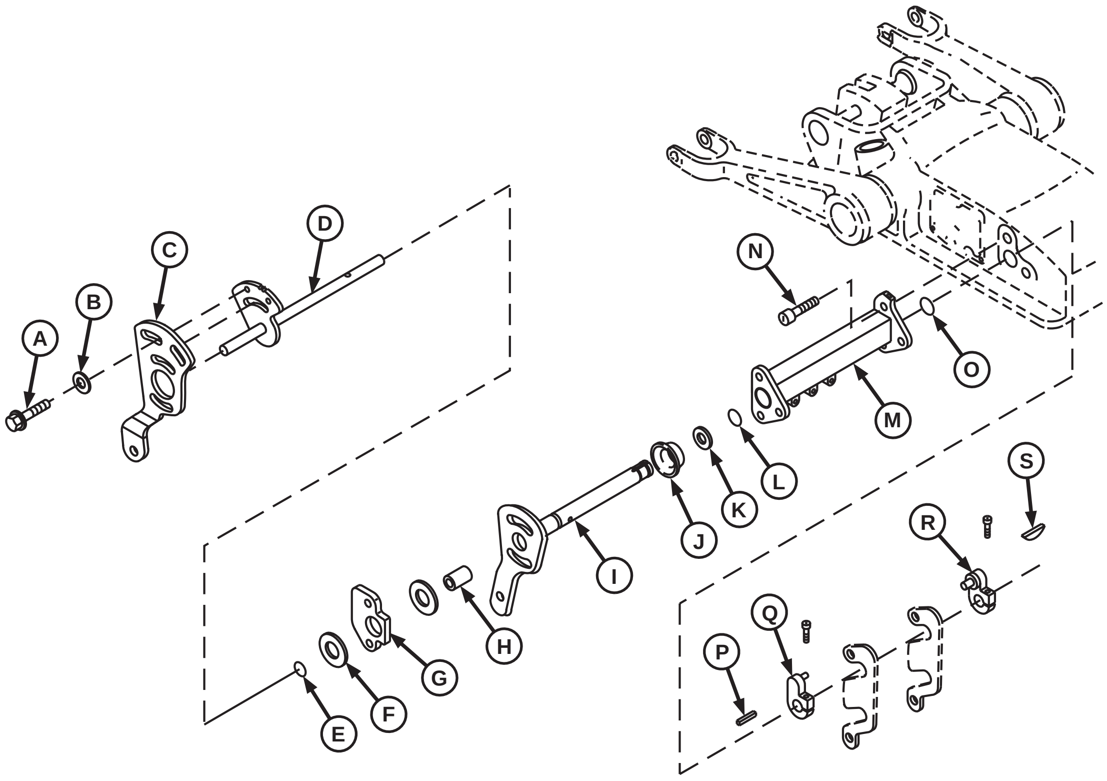
A—Lever
B—E-Clip
C—Socket Head Cap Screw





Continued on next page

OUO1026,000C35A –19–02SEP04–2/5



A—Cap Screw (2 used)
B—Washer (2 used)
C—Alignment Plate
D—Position Control Shaft
E—O-Ring
F—Friction Disk (2 used)
G—Alignment Plate
H—Bushing
I—Draft Sensing Shaft
J—Spacer
K—Washer
L—O-Ring
M—Support
N—Socket Head Cap Screw (2 used)
O—O-Ring
P—Key
Q—Draft Sensing Actuating Lever
R—Position Control Actuating Lever
S—Woodruff Key

NOTE: Levers (Q and R) are keyed to shafts (I and D), respectively, inside rockshaft case. Levers and keys (P and S) will drop into case when lever assembly is removed.

8. Remove parts (A—S).

IMPORTANT: Always use new O-rings during assembly. Damaged or used O-rings will leak.

NOTE: Bushing (H) is press fit inside shaft (I).

9. Inspect all parts for wear or damage. Replace as necessary.

10. Install new O-rings (E, L, and O).

11. Apply multipurpose grease to shafts (D and I).

12. Install all parts.

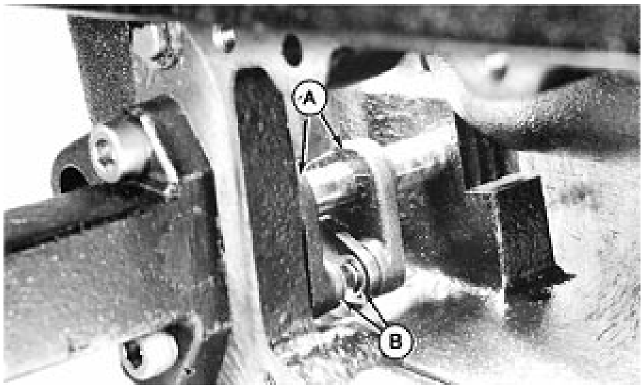
Continued on next page

13. Install and tighten socket head cap screws (C).

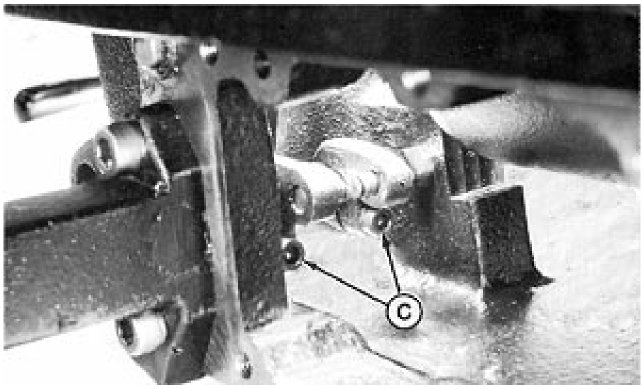
14. Connect links to levers (A) and install E-clips (B).

15. Install inlet housing. (See Remove and Install Rockshaft Control Valve—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

A—Lever
B—E-Clip
C—Socket Head Cap Screw



LV209 –UN–28FEB92



LV210 –UN–28FEB92

Continued on next page

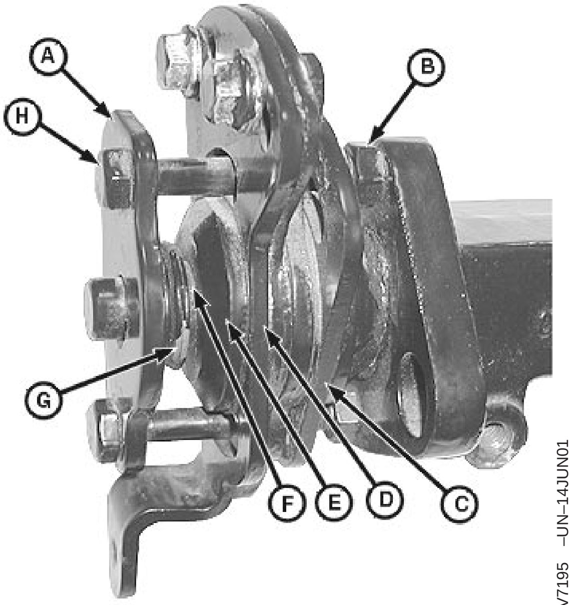
OUO1026,000C35A –19–02SEP04–4/5

IMPORTANT: Each pair of spring washers (C) must be installed with concave sides facing each other.

16. Install parts (A—H).

17. Install rockshaft case. (See Remove and Install Rockshaft Case—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

18. Adjust rockshaft control lever friction. (See Reference 270-15-017, Rockshaft Lever Friction Adjustment (Mechanical Hitch) in TM2197 Section 270, Group 19.)



LV7195 –UN–14JUN01

A—Alignment Plate
B—Jam Nut (2 used)
C—Draft Sensing Lever
D—Position Control Lever
E—Spacer
F—Washer
G—Spring Washer (4 used)
H—Cap Screw (2 used)

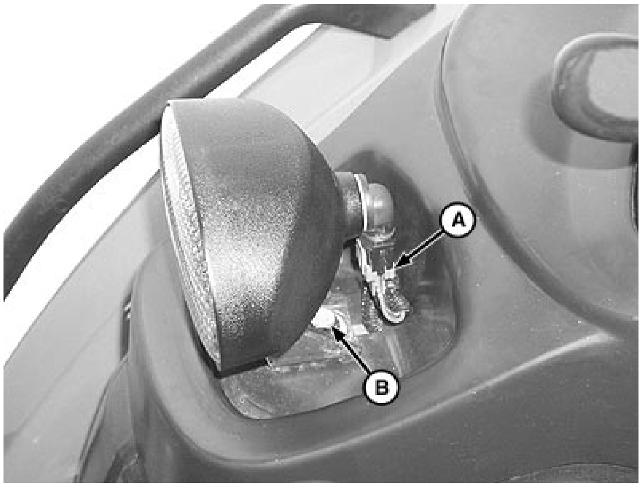
OUO1026,000C35A –19–02SEP04–5/5

Inspect and Repair Rockshaft Control Levers and Cables—Isolated Open Operator Station and Cab Tractors

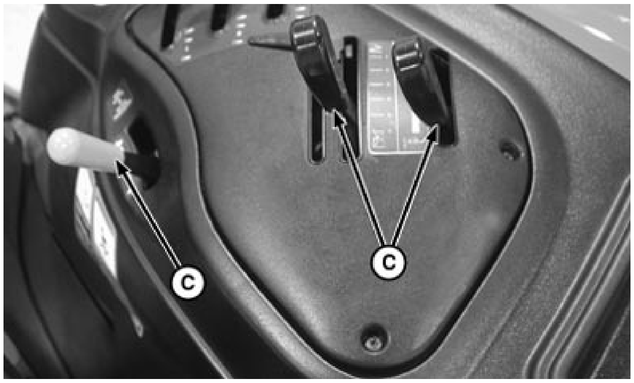
NOTE: Isolated open operator station tractor shown. Cab tractor is similar.

1. Isolated open operator station tractor: Disconnect right floodlight connector (A) and remove mounting cap screw (B).

2. Remove throttle lever and rockshaft control lever knobs (C).



LV8693 –UN–19AUG03



LV10525 –UN–15SEP04

A—Connector
B—Cap Screw
C—Control Knob (3 used)

Continued on next page

OUO1026,000C354 –19–02SEP04–1/4

3. Remove two cover screws (D).

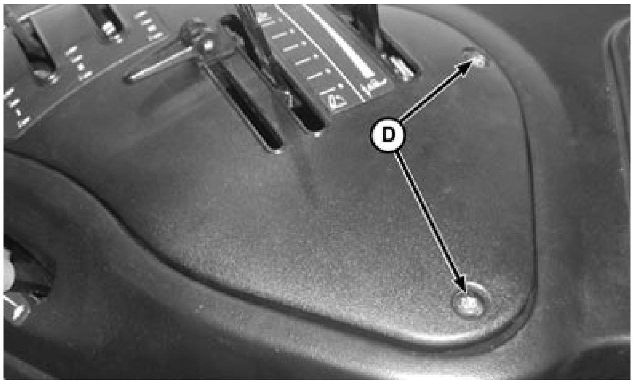
4. Remove cover.

NOTE: Isolated open operator station tractors have four console mounting screws. Cab tractors do not have fourth mounting screw on side of console.

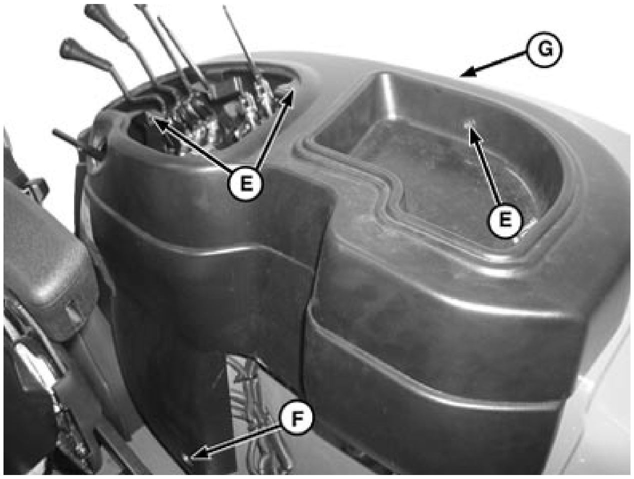
5. Remove console screws (E) and cap screw (F).

6. Remove console (G).

D—Cover Screw (2 used)
E—Screw (3 used)
F—Cap Screw
G—Console

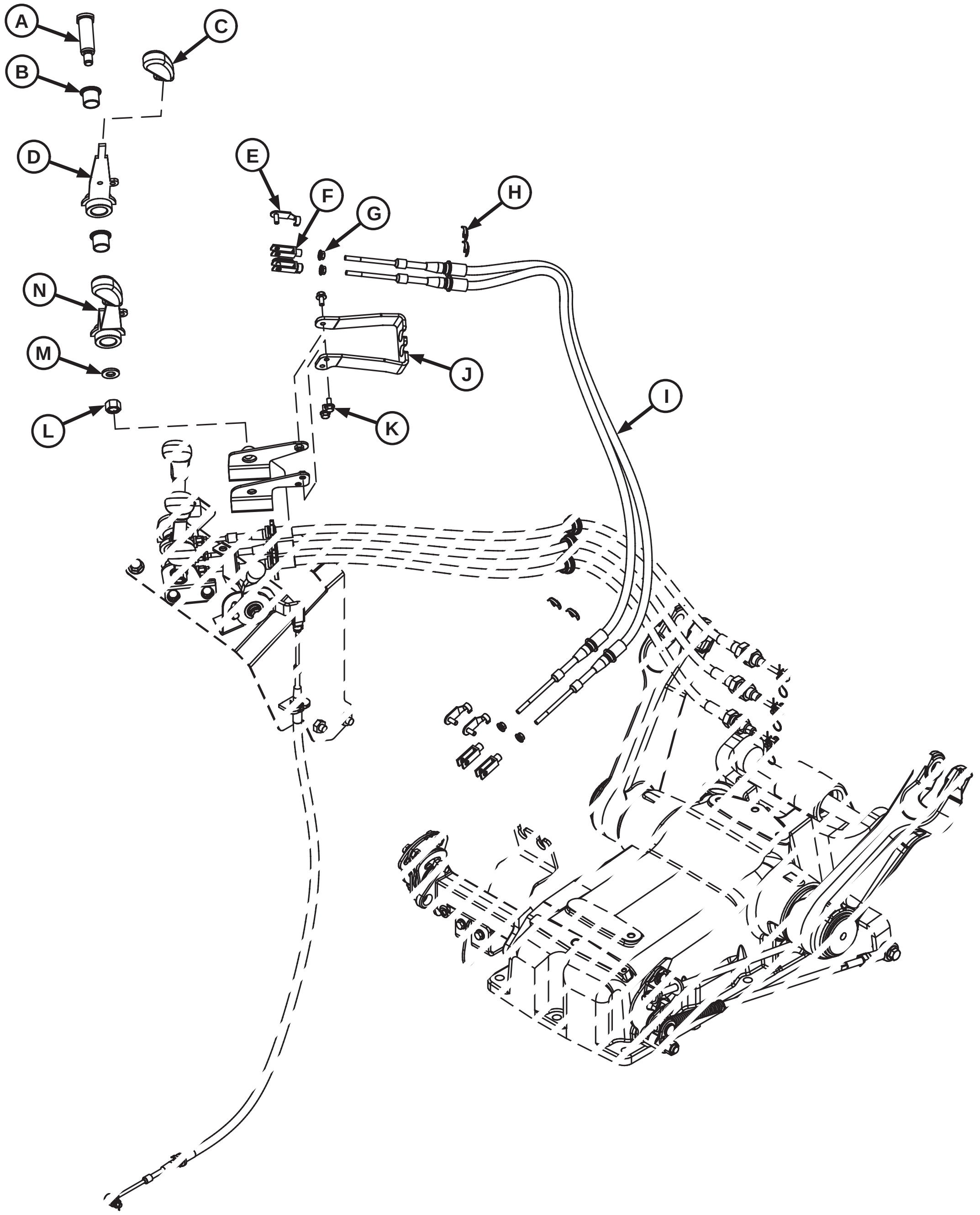


LV10526 –UN–15SEP04



LV10527 –UN–15SEP04

Continued on next page



A—Pin
B—Bushing (2 used)
C—Control Knob (2 used)
D—Position Control Lever
E—Retaining Clip (4 used)
F—Yoke (4 used)
G—Nut (4 used)
H—Cable Clip (4 used)
I—Cable (2 used)
J—Cable Bracket
K—Cap Screw (3 used)
L—Nut
M—Washer
N—Draft Sensing Lever

7. Inspect parts (A—N) for wear or damage.
8. Remove and replace parts as necessary.
9. Install console.
10. Install console cover.
11. Install control knobs.

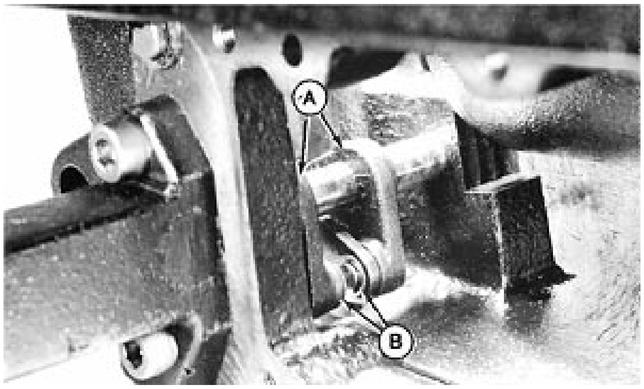
Continued on next page

12. Isolated open operator station tractor: Install right floodlight and connect floodlight harness.

13. Adjust rockshaft control cables. (See Reference 270-15-016, Rockshaft Draft-Sensing and Position Control Cable Adjustment—Isolated Open Operator Station and Cab Tractors (Mechanical Hitch) in TM2197 Section 270, Group 15.)

OUO1026,000C354 –19–02SEP04–4/4

Inspect and Repair Rockshaft Control Linkage



A—Lever
B—E-Clip

1. Remove rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

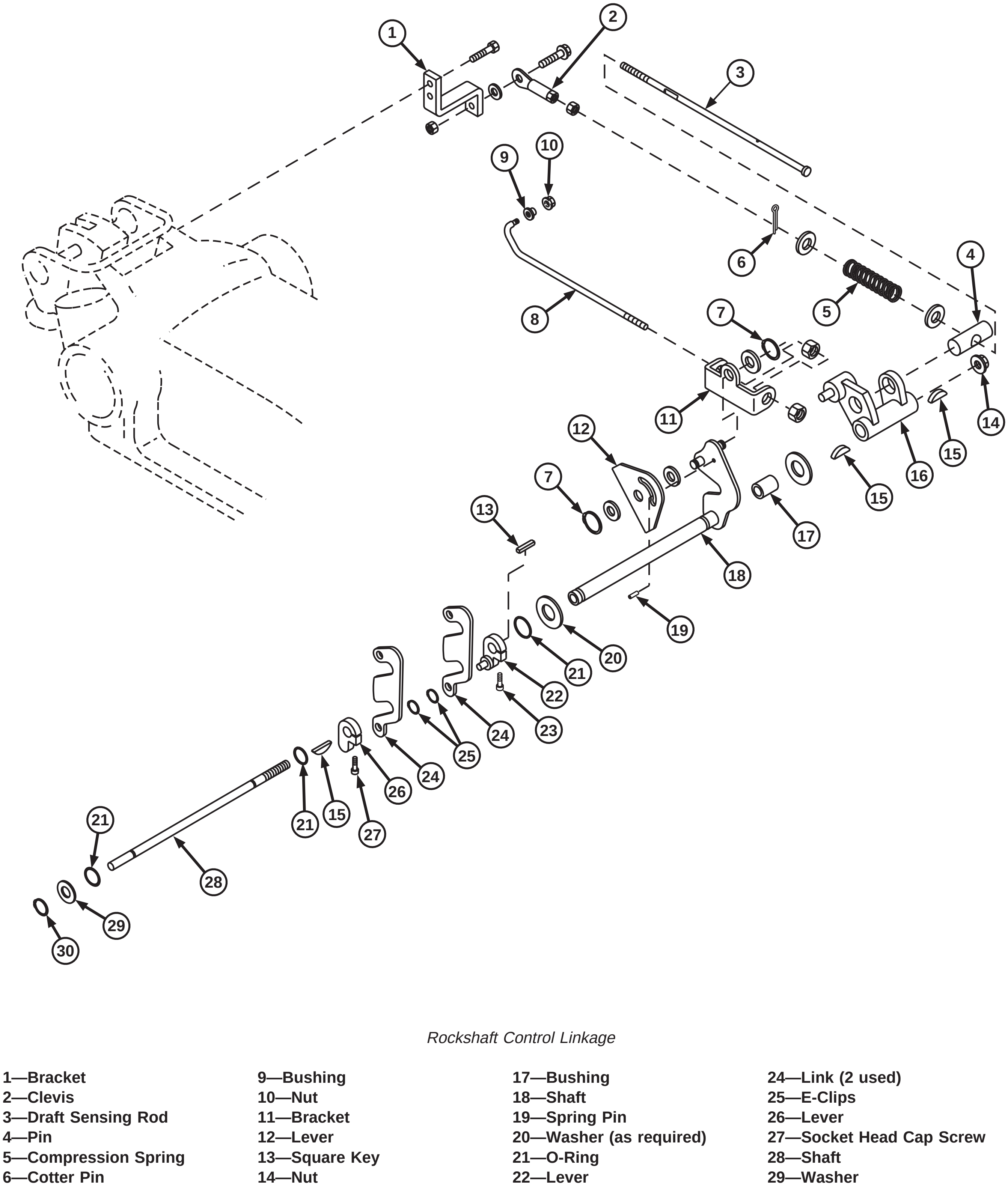
NOTE: To access links inside rockshaft case, rockshaft case must be placed upside down.

2. Turn rockshaft case upside down.

3. Remove E-clips (B). Disconnect links from levers (A).

Continued on next page

OUO1026,000C352 –19–02SEP04–1/4


1
2
3
4
5
6
7
8
9
10
11
12
7
13
14
15
16
15
17
18
19
20
21
22
23
24
25
24
26
21
15
27
21
28
29
30

LV2140 –UN–01JUL02

Rockshaft Control Linkage

1—Bracket
2—Clevis
3—Draft Sensing Rod
4—Pin
5—Compression Spring
6—Cotter Pin
7—E-Clip (2 used)
8—Position Control Feedback Rod
9—Bushing
10—Nut
11—Bracket
12—Lever
13—Square Key
14—Nut
15—Woodruff Key (3 used)
16—Lever
17—Bushing
18—Shaft
19—Spring Pin
20—Washer (as required)
21—O-Ring
22—Lever
23—Socket Head Cap Screw
24—Link (2 used)
25—E-Clips
26—Lever
27—Socket Head Cap Screw
28—Shaft
29—Washer
30—Snap Ring

Continued on next page

4. Remove parts (1—11).

5. Remove socket head cap screws (23 and 27).

6. Remove E-clips (25).

7. Remove and inspect parts for wear or damage. Replace as necessary.

IMPORTANT: Always use new O-rings during assembly. Damaged or used O-rings will leak.

NOTE: Bushing (17) is press fit inside lever (16).

8. Apply multipurpose grease to shafts (18 and 28) and bushing (17).

9. Install all parts.

10. Tighten nut (14) until shaft stops. Then back off 1/2 turn.

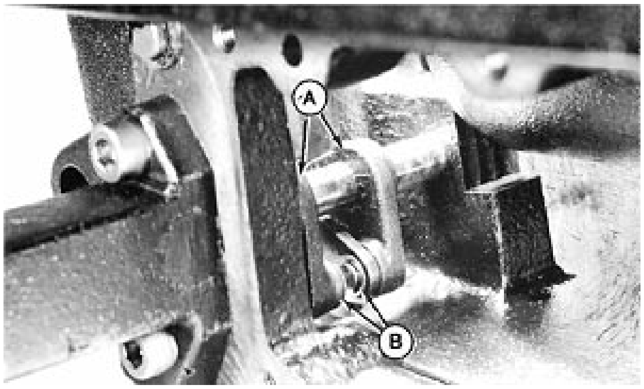
OUO1026,000C352 –19–02SEP04–3/4

11. Connect links to levers (A).

12. Install E-clips (B).

13. Install rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

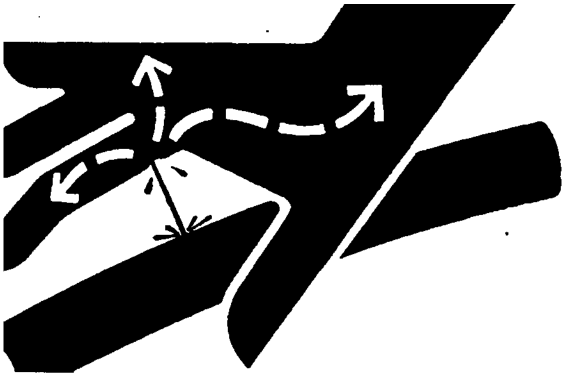
14. Adjust rockshaft position and draft sensing feedback linkages. (See Reference 270-15-018, Rockshaft Position-Sensing Feedback Linkage Adjustment (Mechanical Hitch) and Reference 270-15-019, Rockshaft Draft-Sensing Feedback Linkage Adjustment (Mechanical Hitch) in TM2197 Section 270, Group 15.)



A—Lever
B—E-Clip

OUO1026,000C352 –19–02SEP04–4/4

Remove and Install Rockshaft Control Valve—Straddle Mount



⚠ **CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.**

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.
2. Move SCV levers and Mid-Mount joystick through all positions, if equipped.
3. Remove fuel tank. (See Remove, Inspect and Install Fuel Tank—Straddle Mount in Section 30, Group 05.)
4. Remove right fender.
5. Remove right-side control console and panel. (See Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)

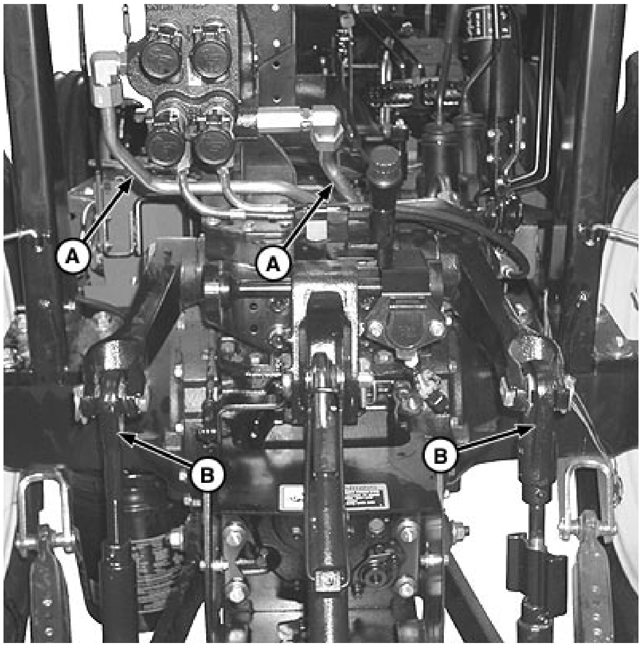
70
10
17

Continued on next page

NOTE: It is not necessary to remove rear SCV(s), but hydraulic lines must be disconnected and free from line clamps.

6. Tag and disconnect SCV hydraulic lines (A) at both ends. Cap or plug openings. Loosen all line clamps.

7. Remove hitch links (B).



LV10277 –UN–10SEP04

A—SCV Hydraulic Lines
B—Hitch Links

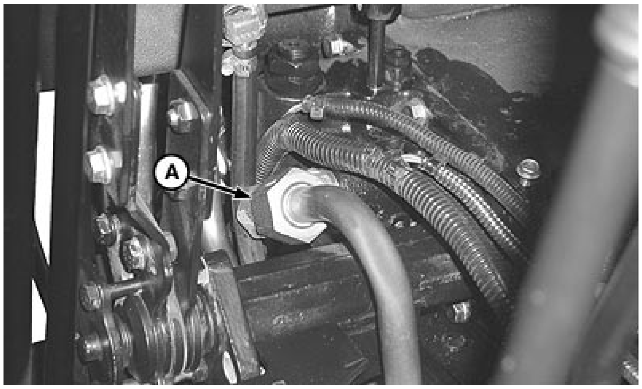
OUO1026,000C351 –19–02SEP04–2/7

NOTE: SCV lines vary depending on what SCV configuration machine is equipped with.

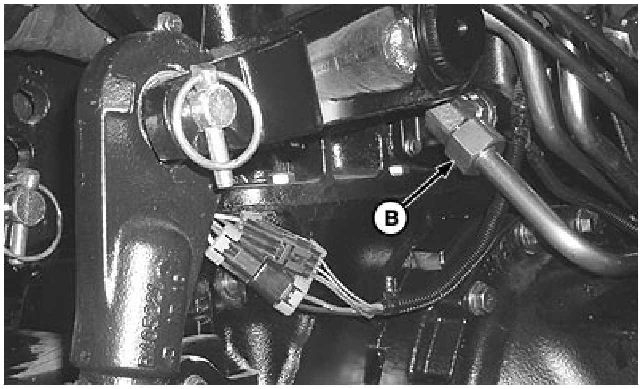
8. Disconnect line (A) at front of rockshaft control valve (RCV) inlet housing.

9. Disconnect line (B) at rear of inlet housing. Cap and plug openings.

A—Hydraulic Line (Front)
B—Hydraulic Line (Rear)



LV10278 –UN–10SEP04



LV10279 –UN–10SEP04

Continued on next page

OUO1026,000C351 –19–02SEP04–3/7

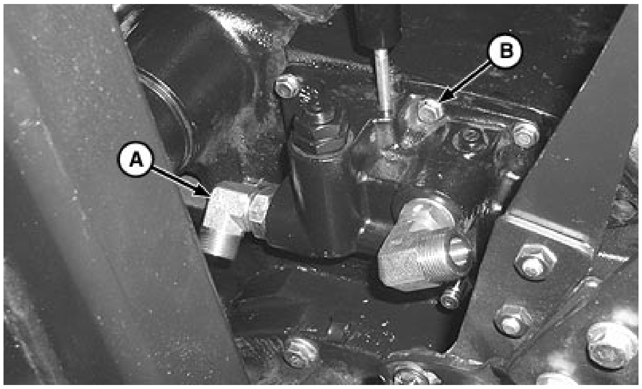
NOTE: Angle of fitting (A) may vary depending on SCV configuration machine is equipped with.

10. Remove fitting (A).

11. Remove six cap screws (B) and inlet housing.

NOTE: It may be necessary to loosen inlet housing by tapping on it with a soft-face mallet or hammer.

12. Remove inlet housing from rockshaft case.



LV10289 –UN–15SEP04

A—Fitting
B—Cap Screw (6 used)

OUO1026,000C351 –19–02SEP04–4/7

13. Remove socket head cap screws (A) and separate control valve (B) from inlet housing (C).

IMPORTANT: Use new O-rings during assembly. Damaged or used O-rings will leak.

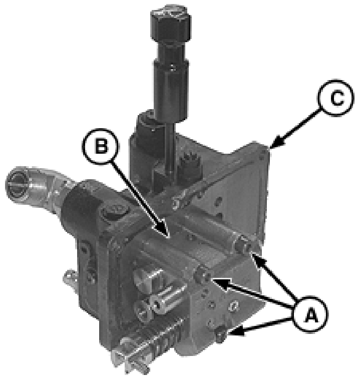
14. Install new O-rings (D and E).

15. Apply Thread Lock and Sealer (Medium Strength) to threads of socket head cap screws (A).

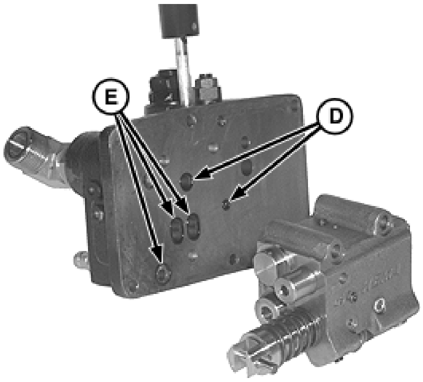
16. Install rockshaft control valve (B) and socket head cap screws (A) to inlet housing (C). Tighten cap screws to specification.

Specification	
Rockshaft Control Valve Socket Head Cap Screw—Torque	28 N•m (21 lb-ft)

17. Clean mating surfaces of inlet housing and rockshaft case using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.



LV10290 –UN–15SEP04



LV10291 –UN–15SEP04

A—Socket Head Cap Screws
B—Rockshaft Control Valve
C—Inlet Housing
D—O-Rings
E—O-Rings

Continued on next page

OUO1026,000C351 –19–02SEP04–5/7

18. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (B).

NOTE: Rockshaft position control lever must be in forward position to install inlet housing.

19. Install inlet housing using six cap screws (B). Tighten to specification.

Specification

Inlet Housing Cap Screw—Torque .... 30 N•m (22 lb-ft)

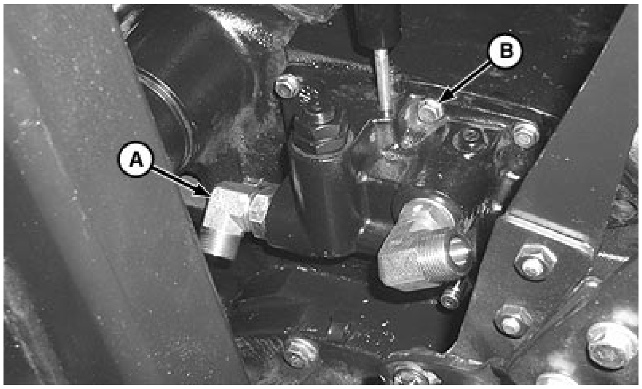
NOTE: Angle of fitting (A) may vary depending on SCV configuration machine is equipped with.

20. Install fitting (A). Tighten fitting to specification.

Specification

Inlet Housing Hydraulic Line Fitting—Torque .... 102 N•m (74 lb-ft)

21. If tractor is equipped with rear SCV(s), connect hydraulic lines and install line clamps.



LV10289 –UN–15SEP04

A—Fitting
B—Cap Screw (6 used)

OUO1026,000C351 –19–02SEP04–6/7

NOTE: SCV lines vary depending on what SCV configuration machine is equipped with.

22. Connect hydraulic lines (A and B) to RCV inlet housing. Tighten nuts to specification.

Specification

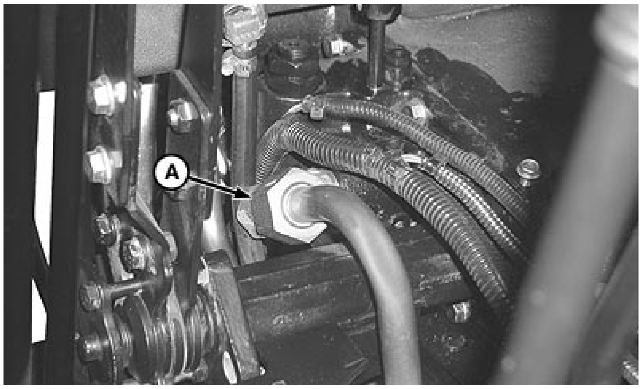
Hydraulic Line Nut—Torque .... 69 N•m (51 lb-ft)

23. Install right-side control console and panel. (See Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)

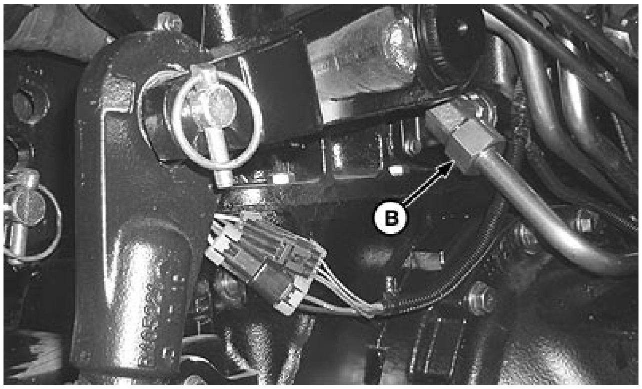
24. Install right fender.

25. Install fuel tank. (See Remove, Inspect and Install Fuel Tank—Straddle Mount in Section 30, Group 05.)

A—Hydraulic Line (Front)
B—Hydraulic Line (Rear)



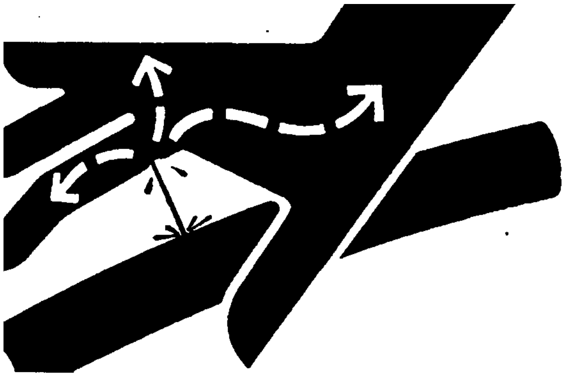
LV10278 –UN–10SEP04



LV10279 –UN–10SEP04

OUO1026,000C351 –19–02SEP04–7/7

Remove and Install Rockshaft Control Valve—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch



X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Move rear and/or Mid-Mount SCV levers, if equipped, through all positions.

Continued on next page

OUO1026,000C362 –19–09SEP04–1/4

NOTE: All hydraulic lines to inlet housing must be disconnected. When disconnecting lines from inlet housing, loosen or disconnect fittings on opposite ends of the lines. Close all openings using caps and plugs. Tag lines for proper installation.

NOTE: The hydraulic lines may leak oil when being disconnected. Catch leaking oil and dispose of properly.

NOTE: Isolated open operator station tractor shown. Procedure for cab tractors is similar.

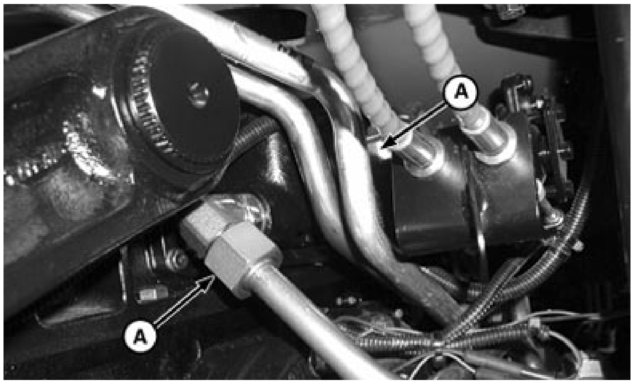
3. Tag and disconnect all hydraulic lines (A), from inlet housing.

NOTE: Depending upon SCV options, if equipped, it may be necessary to loosen SCV hydraulic lines at both ends to provide clearance for inlet housing removal.

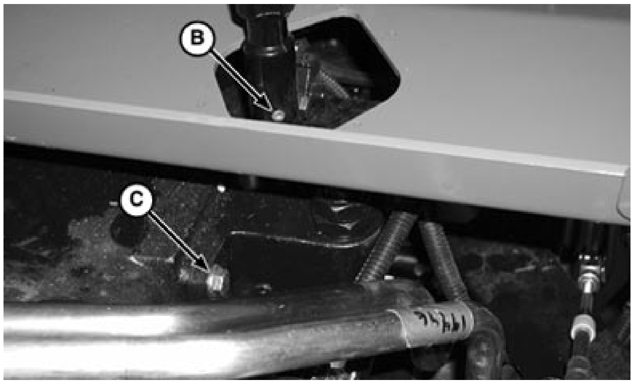
4. Loosen or disconnect rear SCV lines, if equipped, as necessary.
5. Loosen set screw (B) and remove rate of drop knob.
6. Remove six cap screws (C) from inlet housing.

NOTE: It may be necessary to loosen inlet housing by tapping on it with a soft-face mallet or hammer.

7. Remove inlet housing from rockshaft case.



LV10592 –UN–17SEP04



LV10593 –UN–17SEP04

A—Hydraulic Line
B—Set Screw
C—Cap Screw (6 used)

Continued on next page

OUO1026,000C362 –19–09SEP04–2/4

8. Remove cap screws (A) and separate control valve (B) from inlet housing (C).

9. Repair as necessary. (See Remove, Inspect, and Install Rate-of-Drop Valve—All Tractors With Mechanical Hitch in Section 70, Group 10.)

IMPORTANT: Use new O-rings during assembly. Damaged or used O-rings will leak.

10. Install new O-rings (D and E).

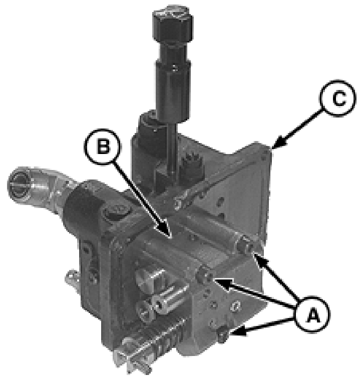
11. Apply Thread Lock and Sealer (Medium Strength) to threads of socket head cap screws (A).

12. Install rockshaft control valve (B) and socket head cap screws (A) on inlet housing (C). Tighten cap screws to specification.

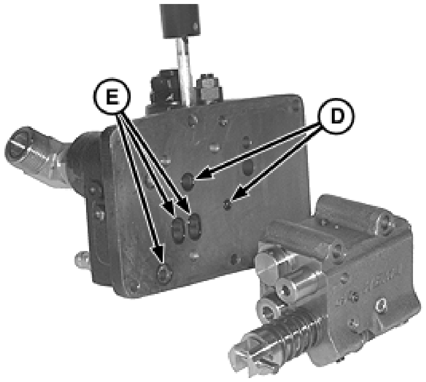
Specification

Rockshaft Control Valve Socket Head Cap Screw—Torque .... 28 N•m (21 lb-ft)

13. Clean mating surfaces of inlet housing and rockshaft case using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.



LV10290 –UN–15SEP04



LV10291 –UN–15SEP04

A—Socket Head Cap Screws
B—Rockshaft Control Valve
C—Inlet Housing
D—O-Rings
E—O-Rings

Continued on next page

OUO1026,000C362 –19–09SEP04–3/4

14. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (C).

NOTE: Rockshaft position control lever must be in forward position to install inlet housing.

15. Install inlet housing using six cap screws (C). Tighten to specification.

Specification

Rockshaft Control Valve Inlet Housing Cap Screws—Torque	30 N•m (22 lb-ft)

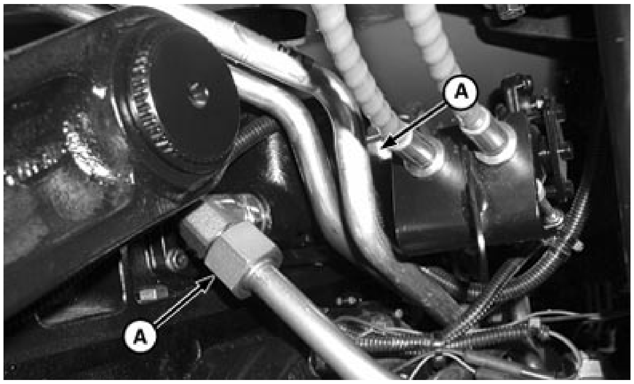
16. If tractor is equipped with rear SCV, connect rear SCV lines.

17. Connect all hydraulic lines (A) to inlet housing. Tighten fittings to specification.

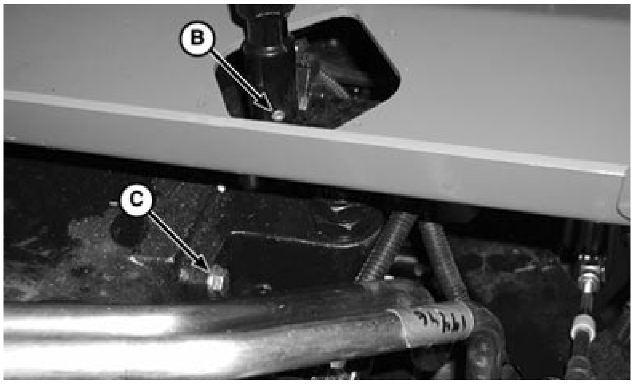
Specification

Hydraulic Line Nut—Torque	69 N•m (51 lb-ft)
Hydraulic Line Fitting—Torque	102 N•m (75 lb-ft)

18. Install rate-of-drop knob and tighten set screw (B).



LV10592 –UN–17SEP04

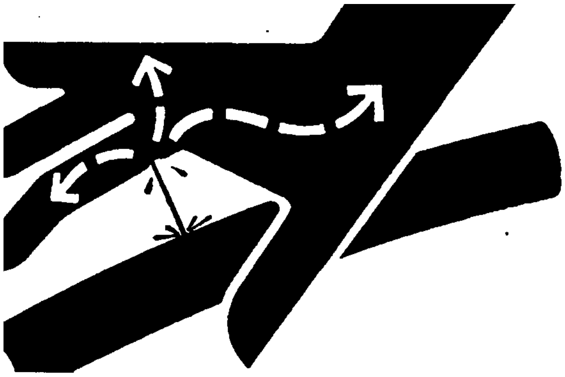


LV10593 –UN–17SEP04

A—Hydraulic Line
B—Set Screw
C—Cap Screw (6 used)

OUO1026,000C362 –19–09SEP04–4/4

Replace Main Relief Valve—All Tractors With Mechanical Hitch


X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Relieve hydraulic system pressure.

Continued on next page

OUO1026,000C35F –19–08SEP04–1/2

NOTE: Main relief valve is located in rockshaft control valve inlet housing. Access is from rear of tractor on isolated open operator station tractors. For straddle mount tractors, slide seat fully forward. For cab tractors, remove cover and grommet at rate-of-drop valve.

3. Remove main relief valve (A) from inlet housing.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

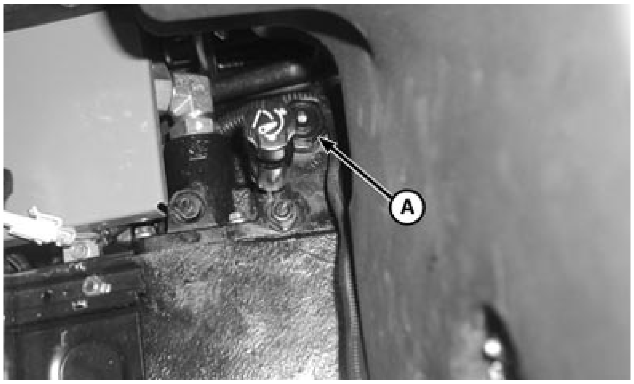
4. Replace O-ring (B), and backup ring and O-ring (C and D).

5. Install main relief valve. Tighten to specification.

Specification	
Main Relief Valve—Torque	62 N•m (46 lb-ft)

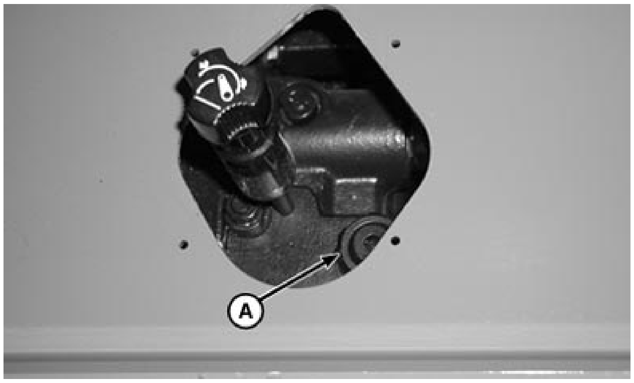
6. Operate machine hydraulics. Check and adjust transmission/hydraulic oil level.

A—Main Relief Valve
B—O-Ring
C—Backup Ring
D—O-Ring



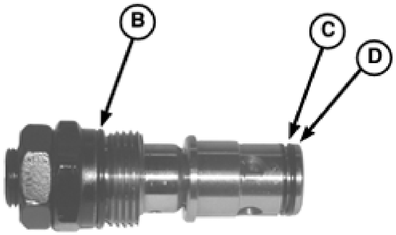
LV10570 –UN–15SEP04

Main Relief Valve—Straddle Mount Tractor



LV10578 –UN–16SEP04

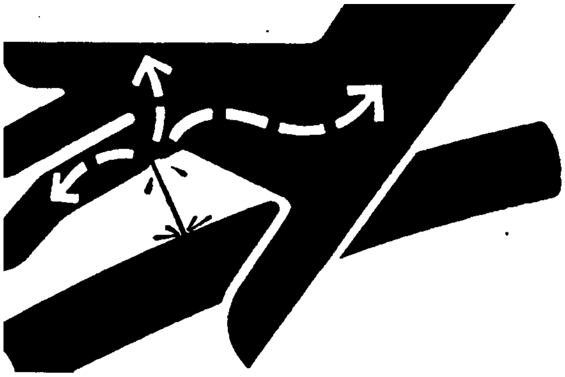
Main Relief Valve—IOOS Tractor



LV10571 –UN–15SEP04

OUO1026,000C35F –19–08SEP04–2/2

Replace Hitch Relief Valve—All Tractors With Mechanical Hitch



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Relieve hydraulic system pressure.

Continued on next page

OUO1026,000C360 –19–08SEP04–1/3

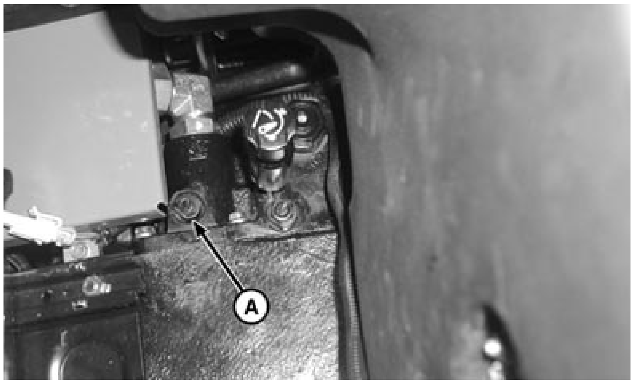
NOTE: Hitch relief valve is located in rockshaft control valve inlet housing. Access is from rear of tractor on isolated open operator station tractors. For straddle mount tractors, slide seat fully forward. For cab tractors, remove cover and grommet at rate-of-drop valve.

3. Remove hitch relief valve (A) from inlet housing.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

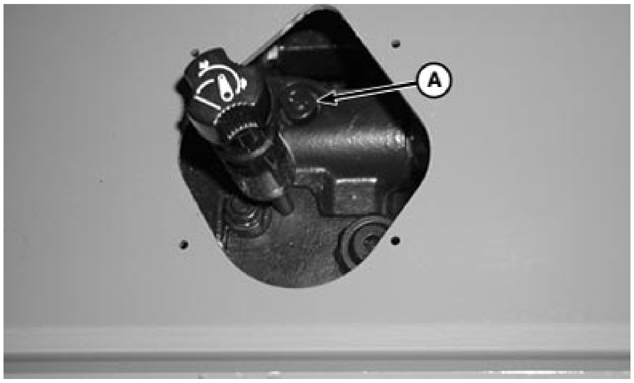
4. Remove and replace O-ring (B) in inlet housing.
5. Inspect parts for wear or damage. Replace complete hitch relief valve assembly if any parts, other than the O-ring, are worn or damaged.

A—Hitch Relief Valve
B—O-Ring



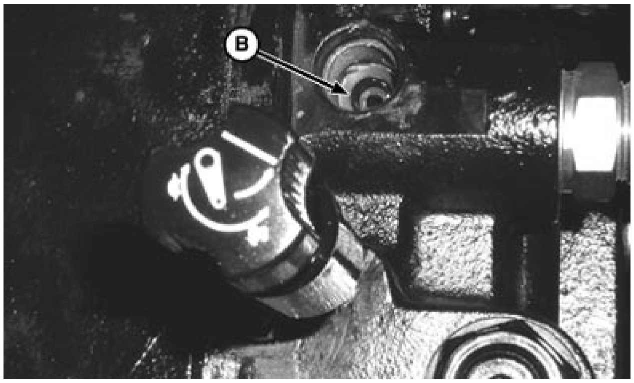
LV10579 –UN–16SEP04

Hitch Relief Valve—Straddle Mount Tractor



LV10580 –UN–16SEP04

Hitch Relief Valve—IOOS Tractor



LV10581 –UN–16SEP04

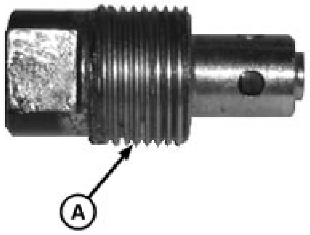
OUO1026,000C360 –19–08SEP04–2/3

6. Apply LOCTITE 242 to threads (A) of hitch relief valve. Install valve and tighten to specification.

Specification

Hitch Relief Valve—Mechanical RCV—Torque	62 N•m (46 lb-ft)

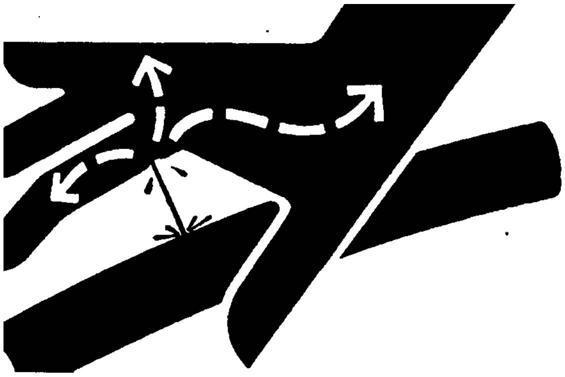
A—Threads



LV10582 –UN–16SEP04

OUO1026,000C360 –19–08SEP04–3/3

Replace Load Sense Relief Valve—All Tractors With Mechanical Hitch


X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Relieve hydraulic system pressure.

Continued on next page

OUO1026,000C361 –19–09SEP04–1/2

NOTE: Load sense relief valve is located in rockshaft control valve inlet housing. Access is from rear of tractor on isolated open operator station tractors. For straddle mount tractors, slide seat fully forward. For cab tractors, remove cover and grommet at rate-of-drop valve.

3. Remove load sense relief valve (A) from inlet housing.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

4. Remove and replace backup ring (B) and O-ring (C).

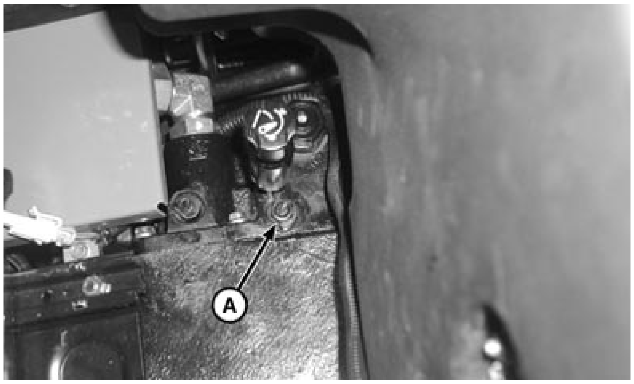
5. Inspect parts for wear or damage. Replace complete relief valve assembly if any parts, other than the O-ring or backup ring are worn or damaged.

6. Install valve in inlet housing and tighten to specification.

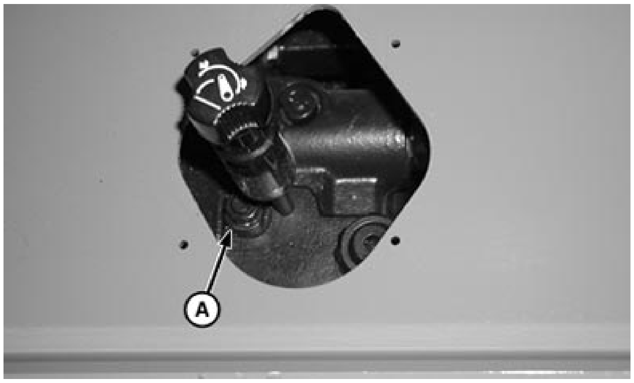
Specification

Load Sense Relief Valve—Torque................................. 62 N•m (46 lb-ft)

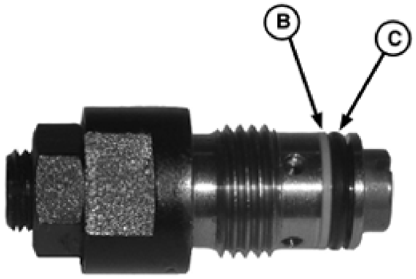
A—Hitch Relief Valve
B—Backup Ring
C—O-Ring



Load Sense Relief Valve—Straddle Mount Tractor

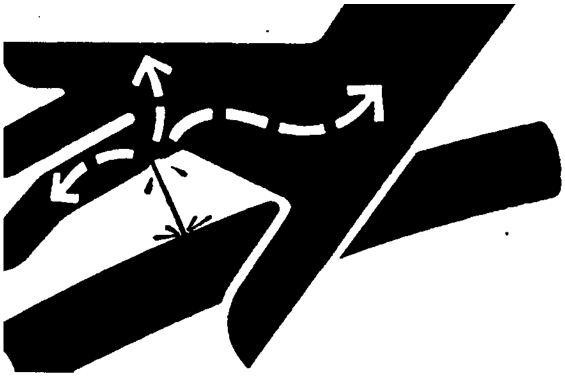


Load Sense Relief Valve—IOOS Tractor



OUO1026,000C361 –19–09SEP04–2/2

Remove, Inspect, and Install Rate-of-Drop Valve—All Tractors With Mechanical Hitch


X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Operate all SCV levers, if equipped, to relieve hydraulic system pressure.

NOTE: It is not necessary to separate rockshaft control valve from inlet housing to service rate-of-drop valve.

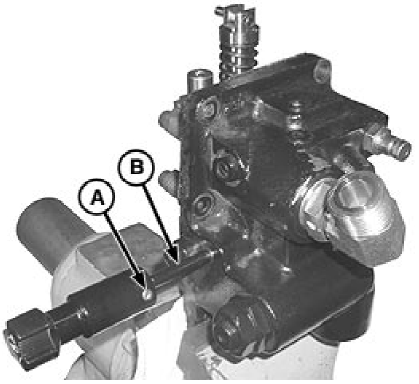
3. Remove rockshaft control valve and inlet housing assembly. (See Remove and Install Rockshaft Control Valve—Straddle Mount or Remove and Install Rockshaft Control Valve—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

Continued on next page

OUO1026,000C359 –19–02SEP04–1/3

4. Loosen set screw (A) and remove knob, if not previously removed.

5. Clean paint from valve stem (B) using fine grit emery cloth.



A—Set Screw
B—Stem

OUO1026,000C359 –19–02SEP04–2/3

6. Remove plug (A) and O-ring (B) from opposite side of inlet housing.

NOTE: Turn valve stem (H) counterclockwise to remove from inlet housing.

7. Remove spring seat (C) and spring (D).

8. Remove valve (E).

9. Turn valve stem (H) counterclockwise until free, then pull from bottom of inlet housing.

10. Inspect parts for wear or damage. Replace parts as necessary.

IMPORTANT: Always use new O-rings and backup rings. Damaged or used parts will leak.

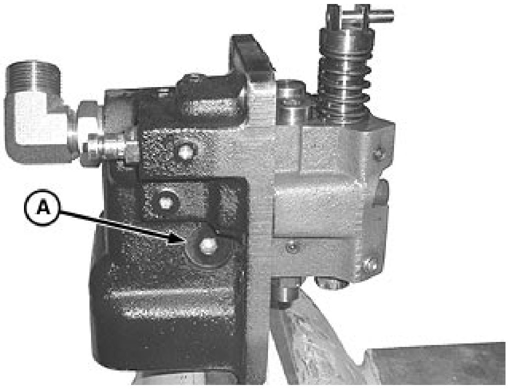
11. Apply multipurpose grease to O-rings, backup ring, and valve stem shaft.

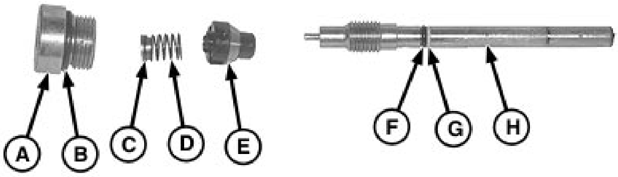
12. Assemble all parts.

13. Install plug using new O-ring.

14. Install knob and tighten set screw.

15. Install rockshaft control valve and inlet housing assembly. (See Remove and Install Rockshaft Control Valve—Straddle Mount or Remove and Install Rockshaft Control Valve—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

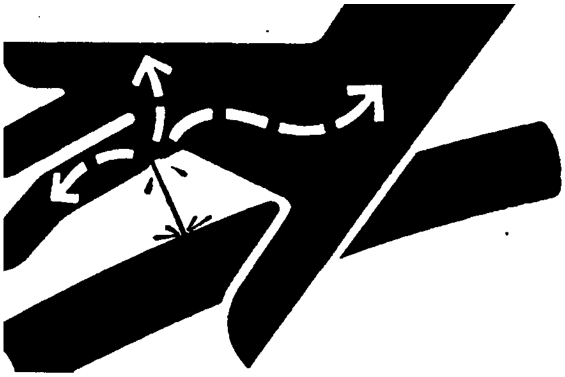




A—Plug
B—O-Ring
C—Spring Seat
D—Spring
E—Valve
F—O-Ring
G—Backup Ring
H—Valve Stem

OUO1026,000C359 –19–02SEP04–3/3

Remove and Install Rockshaft Control Valve—All Tractors With Electro-Hydraulic Hitch



X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

NOTE: Cab tractor is illustrated. Procedure for isolated open operator station tractor is similar.

1. Lower rockshaft arms completely.
2. Relieve hydraulic system pressure.

Continued on next page

OUO1026,0007501 –19–21SEP04–1/2

NOTE: SCV lines vary depending on what SCV configuration machine is equipped with.

3. Disconnect hydraulic lines (A) to rockshaft control valve.

4. Disconnect raise and lower solenoid connectors (B).

5. Remove cap screws (C) and rockshaft control valve.

6. Repair valve as necessary. (See Rockshaft Control Valve Repair—All Tractors With Electro-Hydraulic Hitch in Section 70, Group 10.)

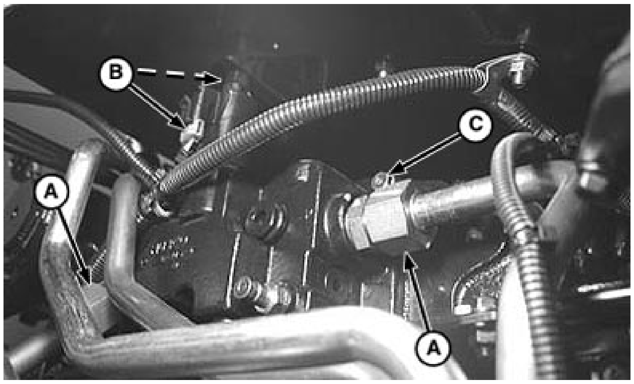
7. Clean mating surfaces of valve housing and rockshaft case using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

8. Install valve using cap screws (C). Tighten cap screws to specification.

Specification	
Rockshaft Control Valve-to-Rockshaft Case Cap Screws—Torque	30 N•m (22 lb-ft)

9. Connect hydraulic lines and solenoid connectors. Tighten nuts to specification.

Specification	
Hydraulic Line Nut—Torque	69 N•m (51 lb-ft)

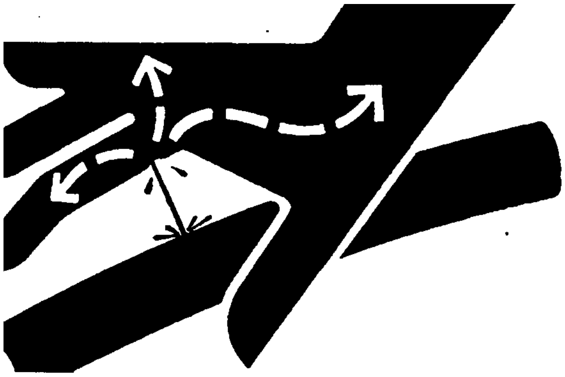


LV11087 –UN–14OCT04

A—Hydraulic Lines
B—Solenoid Connectors
C—Cap Screw (6 used)

OUO1026,0007501 –19–21SEP04–2/2

Rockshaft Control Valve Repair—All Tractors With Electro-Hydraulic Hitch


X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

NOTE: Cab tractor shown. Isolated open operator station tractors are similar.

Relieve hydraulic system pressure prior to performing any of the following procedures.

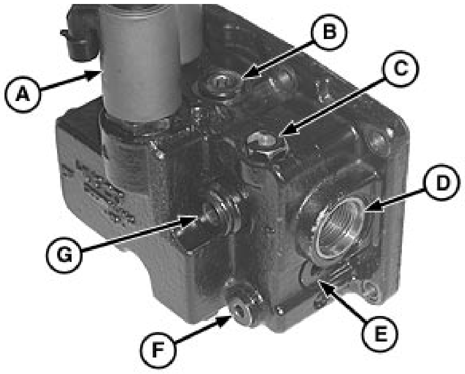
Procedures requiring rockshaft control valve (RCV) removal will be noted. All others listed can be performed on the tractor. Refer to the exploded view in this group for valve component identification. Check hydraulic fluid level after service is complete and add oil as necessary.

Continued on next page

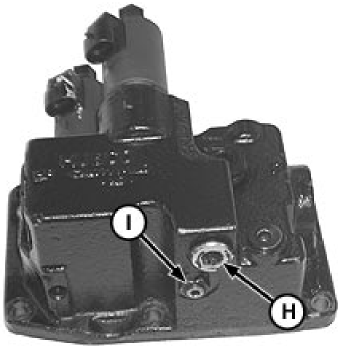
OUO1026,0007502 –19–22SEP04–1/10

Rockshaft Control Valve Component Identification

A—Solenoid Valve (2 used)
B—Compensator Valve
C—Manual Override Valve
D—Supply Port
E—Load Check Valve
F—Diagnostic Port
G—System Relief Valve
H—Work Port Relief Valve
I—Load Sense Relief Valve



LV10753 –UN–05OCT04

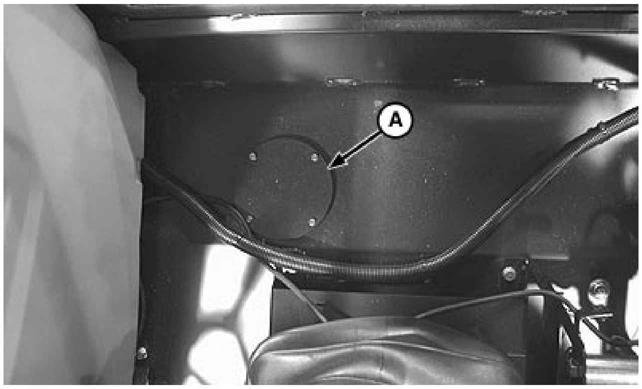


LV10754 –UN–05OCT04

Continued on next page

OUO1026,0007502 –19–22SEP04–2/10

Remove and Install Compensator Valve



LV10750 –UN–05OCT04

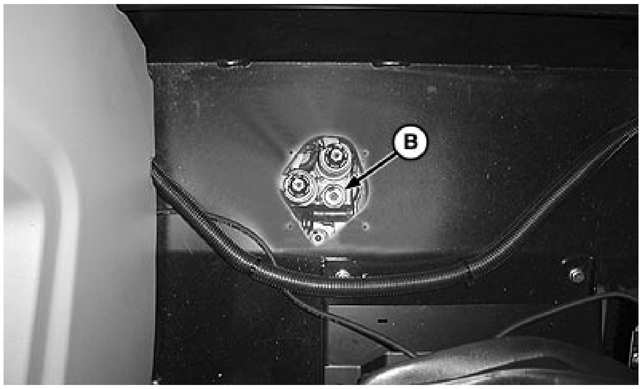
1. Relieve hydraulic system pressure.
2. Remove four screws and cover (A) behind operator seat to access rockshaft control valve.
3. Remove plug (B), O-ring (C), valve (D) and spring (E).
4. Clean and inspect parts. If any parts, besides O-ring, are worn or damaged, entire valve must be replaced.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

5. Install spring, valve, O-ring and plug. Tighten plug to specification.

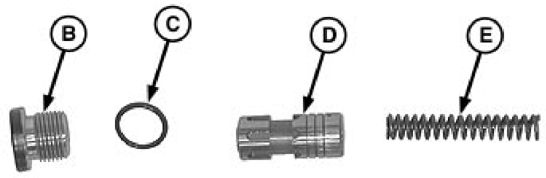
Specification	
Compensator Valve Plug— Torque	45 N•m (33 lb-ft)

6. Install cover and screws.



LV10751 –UN–05OCT04

A—Cover
B—Plug
C—O-Ring
D—Compensator Valve
E—Spring



LV10755 –UN–05OCT04

Continued on next page

Remove and Install Manual Override Valve

1. Relieve hydraulic system pressure.

2. Remove four screws and cover (A).

3. Remove protective cap, nut (B) and O-ring (C).

4. Remove valve (F) by turning counterclockwise.

5. Remove backup ring (D) and O-ring (E) from valve.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

6. Clean and inspect parts. Replace as necessary.

7. Assemble new O-ring and backup ring onto valve.

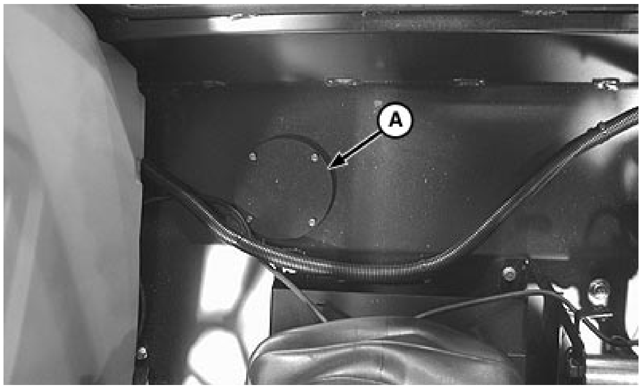
8. Install new O-ring on nut (B).

9. Lubricate and install assembled valve into nut. Then install valve in housing and turn clockwise until it stops. Do not overtighten. Turn nut until tightened to specification.

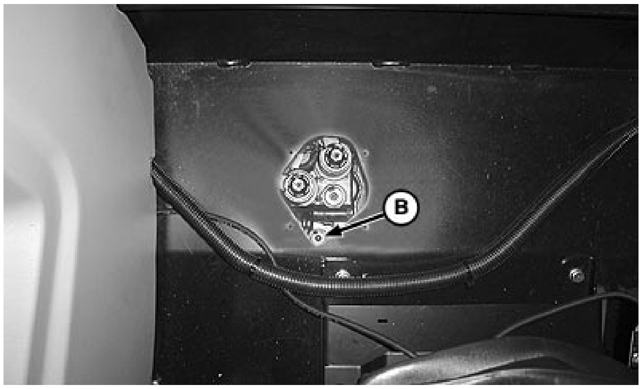
Specification	
Manual Override Valve Packing Nut—Torque	14 N•m (124 lb-in.)

10. Install cover and screws.

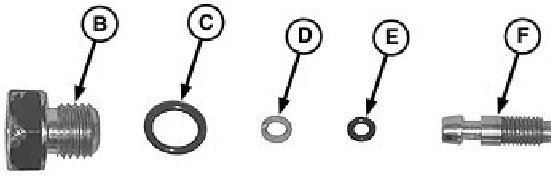
A—Cover
B—Packing Nut
C—O-Ring
D—Backup Ring
E—O-Ring
F—Manual Override Valve



LV10750 –UN–05OCT04



LV10756 –UN–05OCT04



LV10757 –UN–05OCT04

Continued on next page

Remove and Install Solenoid Valve(s)

1. Relieve hydraulic system pressure.
2. Remove four screws and cover (A).
3. Disconnect harness from coil connector.
4. Remove coil retaining nut (B) and O-ring (C).
5. Remove coil (D) and O-ring (E).
6. Remove solenoid poppet (F) and O-ring (G) using a deep thin wall socket.
7. Remove valve (H) from housing using a magnet.
8. Clean and inspect parts for wear or damage. Replace as necessary.
9. Lubricate and install valve (H) into housing.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

10. Lubricate and install poppet using a new O-ring (G). Tighten poppet to specification.

Specification

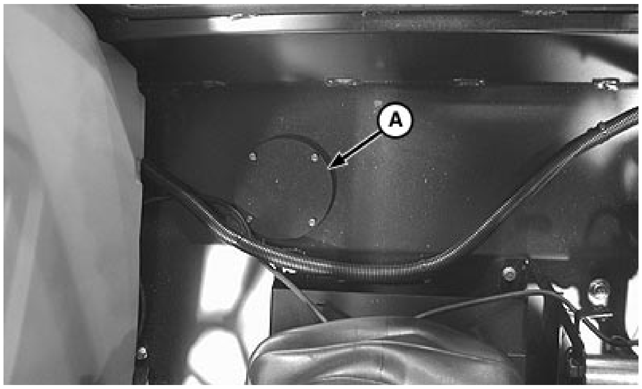
Solenoid Valve Poppet—Torque .... 100 N•m (74 lb-ft)

11. Install O-ring (E) and coil (D).
12. Install O-ring (C) and coil nut (B). Tighten nut to specification.

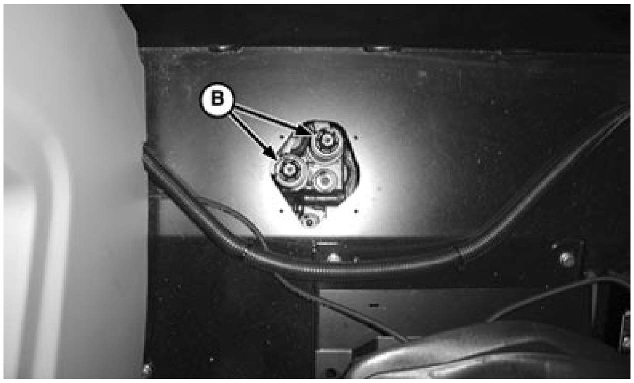
Specification

Coil Retaining Nut—Torque .... 2.3 N•m (20 lb-in.)

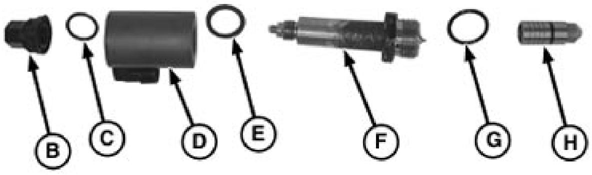
13. Connect harness connector to coil.
14. Install cover and screws.



LV10750 –UN–05OCT04



LV10760 –UN–04OCT04



LV10761 –UN–04OCT04

A—Cover
B—Nut
C—O-Ring
D—Coil
E—O-Ring
F—Poppet
G—O-Ring
H—Valve

Continued on next page

Remove and Install System Relief Valve

NOTE: System relief valve is located in RCV on right-hand side of rockshaft case.

1. Relieve hydraulic system pressure.

2. Remove system relief valve (A) and O-ring (B).

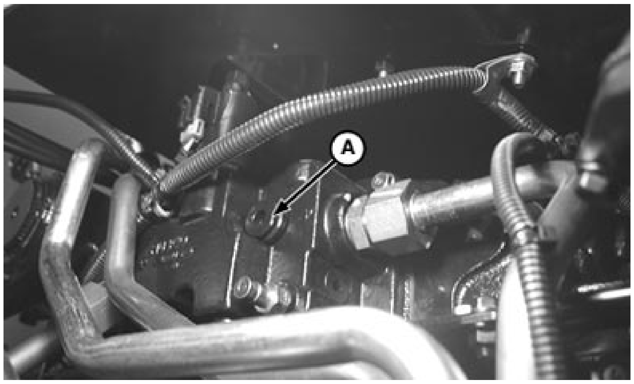
3. Clean and inspect valve for wear or damage. If valve is damaged it must be replaced.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

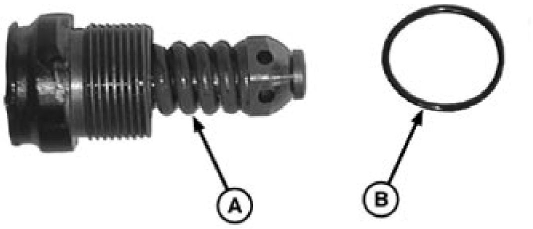
4. Install new O-ring on valve, then lubricate and install valve in housing. Tighten valve to specification.

Specification	
System Relief Valve—Torque	81 N•m (60 lb-ft)

A—System Relief Valve
B—O-Ring



LV10752 –UN–04OCT04



LV10847 –UN–06OCT04

Continued on next page

OUO1026,0007502 –19–22SEP04–6/10

Remove and Install Load Check Valve

NOTE: Load check valve is located in front side of RCV on right-hand side of rockshaft housing.

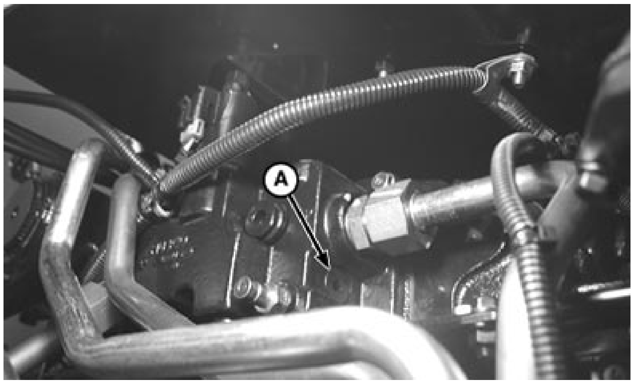
1. Relieve hydraulic system pressure.

2. Remove plug (A) and O-ring (B).

3. Remove spring (C), guide (D), and ball (E).

4. Clean and inspect parts for wear or damage. If anything other than the O-ring is damaged, replace entire valve.

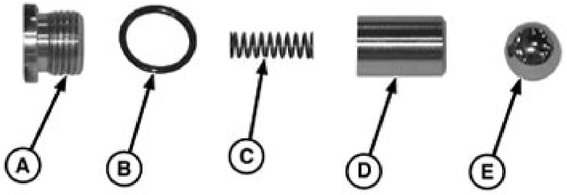
5. Lubricate parts, then install ball (E), guide (D), spring (C), and plug (A), using new O-ring. Tighten plug to specification.



LV10848 –UN–04OCT04

Specification

Load Check Valve Plug—Torque.................................... 47 N•m (35 lb-ft)



LV10849 –UN–04OCT04

A—Plug
B—O-Ring
C—Spring
D—Guide
E—Ball

Continued on next page

Remove and Install Load Sense Relief Valve

NOTE: If equipped with some tractor options, specifically Electro-Hydraulic PTO control, it may be easier to remove RCV to service load sense relief valve.

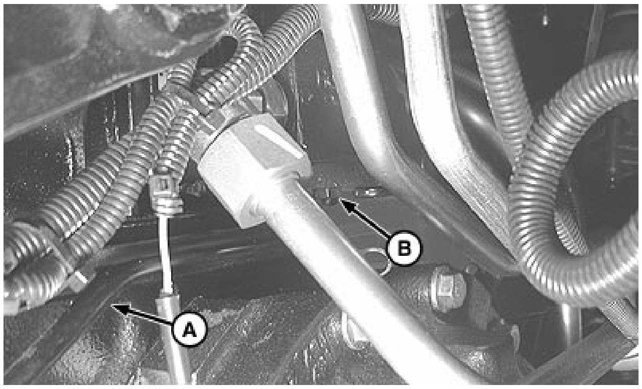
1. Relieve hydraulic system pressure.
2. Disconnect hydraulic lines (A) (if equipped) routed under rockshaft control valve, or remove valve.
3. Remove jam nut (B).
4. Remove adjusting screw (C) and O-ring (D), spring (E), and valve (F).
5. Clean and inspect parts for wear or damage. If any part other than the O-ring is damaged, replace entire valve assembly.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

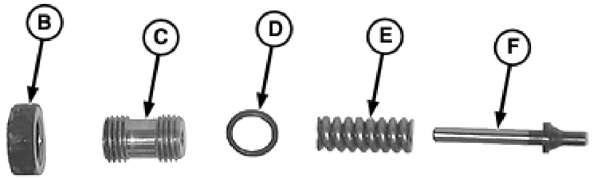
6. Install a new O-ring (D) on adjusting screw (C).
7. Install valve (F), spring (E), and O-ring (D) and adjusting screw (C).
8. Install jam nut (B). Do not tighten at this time.
9. Connect any hydraulic lines disconnected in step 2, or install RCV if removed.
10. Adjust load sense relief pressure. (See procedure in TM2197, Section 270.)
11. Tighten jam nut to specification.

Specification

Load Sense Relief Valve Jam Nut—Torque .... 9.5 N•m (84 lb-in.)



LV10758 –UN–07OCT04



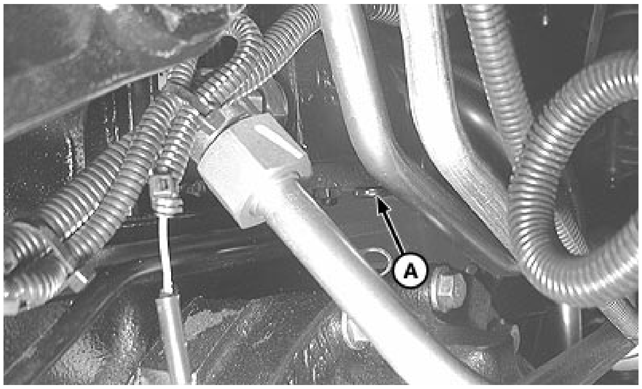
LV10759 –UN–07OCT04

A—Hydraulic Line
B—Jam Nut
C—Adjusting Screw
D—O-Ring
E—Spring
F—Valve

Continued on next page

OUO1026,0007502 –19–22SEP04–8/10

Remove and Install Work Port Pressure Relief Valve



LV10854 –UN–07OCT04

1. Relieve hydraulic system pressure.

2. Disconnect and move hydraulic lines routed under rockshaft control valve, as necessary.

3. Remove work port pressure relief valve (A) and O-ring (B).

4. Clean and inspect parts for wear or damage. If anything other than the O-ring is damaged, replace entire valve assembly.

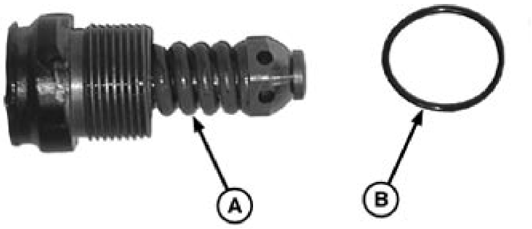
5. Lubricate and install valve (A) using a new O-ring (B). Tighten valve to specification.

Specification

Work Port Relief Valve—Torque .... 34 N•m (25 lb-ft)

6. Connect and tighten all hydraulic lines disconnected in step 2.

A—Work Port Pressure Relief Valve
B—O-Ring



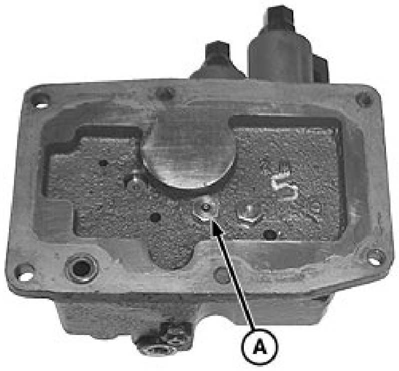
LV10847 –UN–06OCT04

Continued on next page

OUO1026,0007502 –19–22SEP04–9/10

Remove and Install Load Sense Bleed Orifice

NOTE: Rockshaft control valve must be removed from tractor to service load sense bleed orifice.



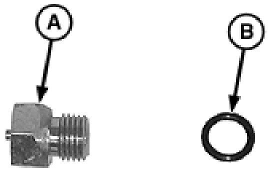
LV10856 –UN–07OCT04

1. Remove rockshaft control valve. (See Remove and Install Rockshaft Control Valve—All Tractors With Electro-Hydraulic Hitch in Section 70, Group 10.)

2. Remove load sense bleed orifice (A) and O-ring (B).

3. Clean and inspect parts for wear or damage. If anything other than the O-ring is damaged, replace complete orifice.

4. Lubricate and install orifice (A) using a new O-ring (B). Tighten orifice to specification.



LV10857 –UN–07OCT04

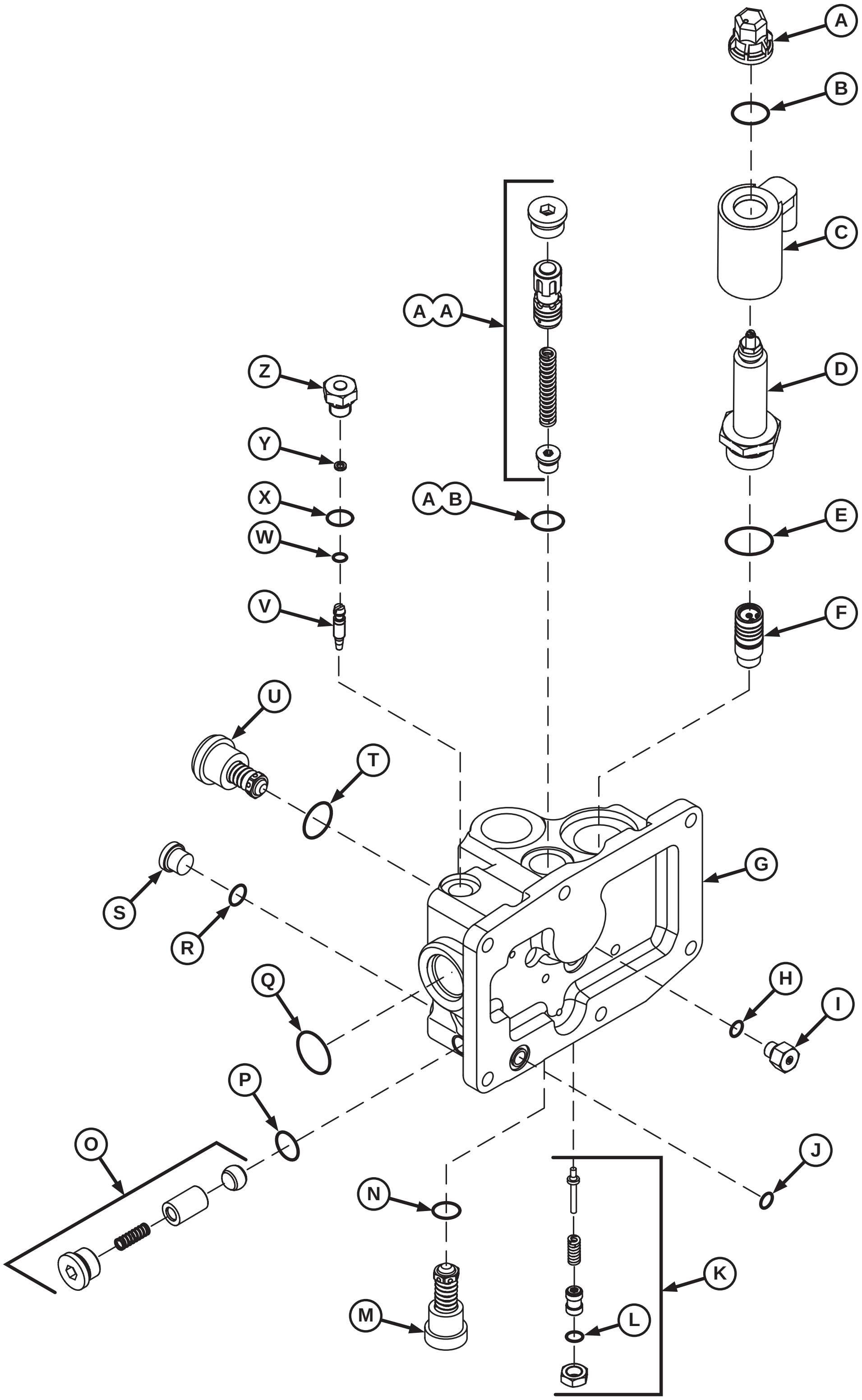
Specification	
Load Sense Bleed Orifice— Torque	9.5 N•m (84 lb-in.)

5. Install rockshaft control valve. (See Remove and Install Rockshaft Control Valve—All Tractors With Electro-Hydraulic Hitch in Section 70, Group 10.)

A—Bleed Orifice
B—O-Ring

OUO1026,0007502 –19–22SEP04–10/10

Rockshaft Control Valve Exploded View—All Tractors With Electro-Hydraulic Hitch


A
B
C
AA
D
Z
Y
X
AB
E
W
V
F
U
T
G
S
R
Q
H
I
P
J
O
N
K
M
L

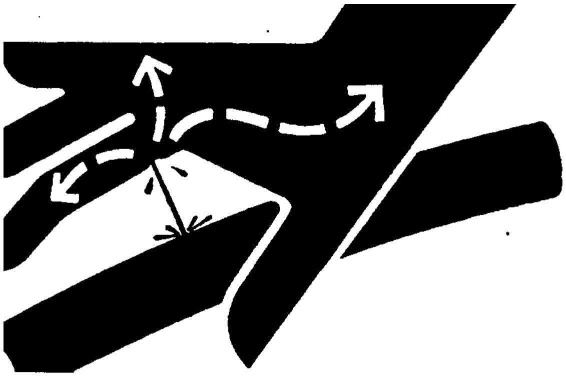
LV10749 –UN–05OCT04

Continued on next page

A—Coil Nut
B—O-Ring
C—Coil
D—Poppet
E—O-Ring
F—Valve
G—Housing
H—O-Ring
I—Load Sense Bleed Orifice
J—O-Ring
K—Load Sense Relief Valve
L—O-Ring
M—Work Port Relief Valve
N—O-Ring
O—Load Check Valve
P—O-Ring
Q—O-Ring
R—O-Ring
S—Diagnostic Port Plug
T—O-Ring
U—System Relief Valve
V—Manual Override Valve
W—O-Ring
X—Backup Ring
Y—O-Ring
Z—Nut
AA—Compensator Valve
AB—O-Ring

OUO1026,0007503 –19–23SEP04–2/2

Remove and Install Rockshaft Case—Straddle Mount



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Move SCV levers and Mid-Mount joystick through all positions, if equipped.

3. Remove fuel tank. (See Remove, Inspect and Install Fuel Tank—Straddle Mount in Section 30, Group 05.)

4. Remove seat and support. (See Remove and Install Seat and Support—Straddle Mount in Section 90, Group 05.)

5. Remove fenders. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

6. Remove left- and right-side control consoles and panels. (See Remove and Install Left-Side Control Console—Straddle Mount or Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)

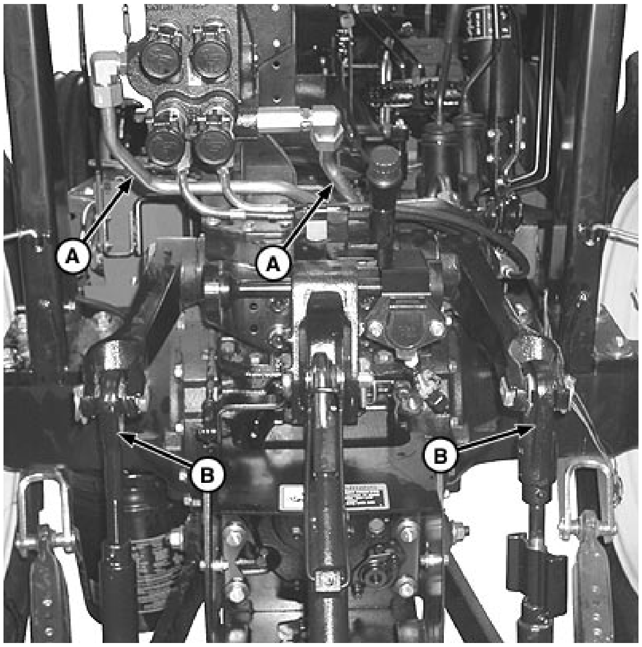
7. Disconnect wiring harness as necessary to allow lifting of rockshaft case.

Continued on next page

8. Tag and disconnect SCV hydraulic lines (A) at both ends, if equipped. Cap or plug openings.

9. Remove center link and disconnect lift links (B) from lift arms.

A—Hydraulic Lines
B—Lift Links



LV10277 –UN–10SEP04

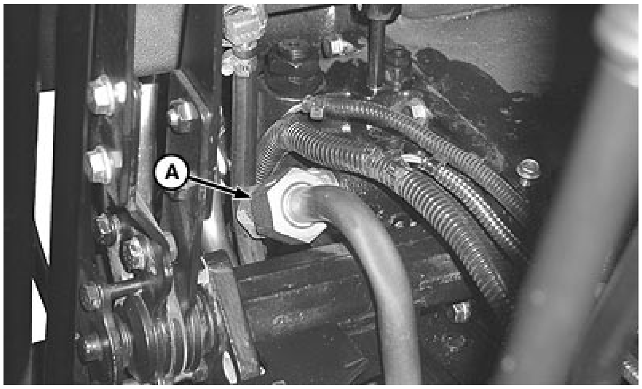
OUO1026,0000009 –19–31AUG04–2/13

NOTE: SCV lines vary depending on what SCV configuration machine is equipped with.

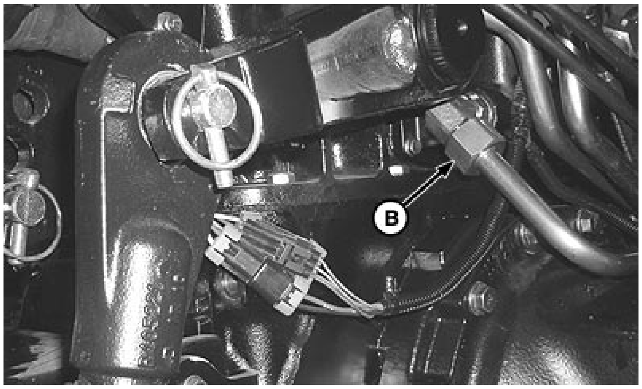
10. Disconnect line (A) at front of rockshaft control valve.

11. Disconnect line (B) at rear of rockshaft control valve. Cap and plug openings.

A—Hydraulic Line (Front)
B—Hydraulic Line (Rear)



LV10278 –UN–10SEP04



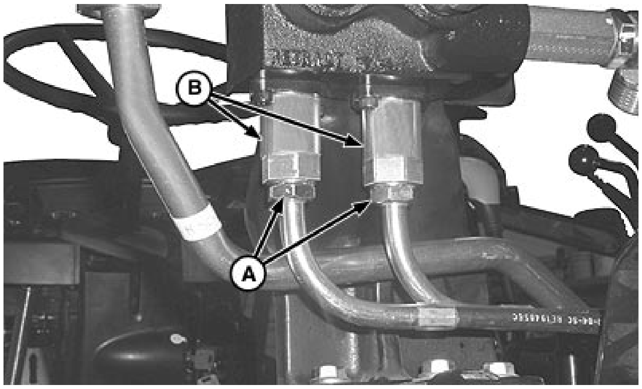
LV10279 –UN–10SEP04

Continued on next page

OUO1026,0000009 –19–31AUG04–3/13

12. Loosen nuts (A and B) and slide end of control cables out of slot in each SCV, if equipped.

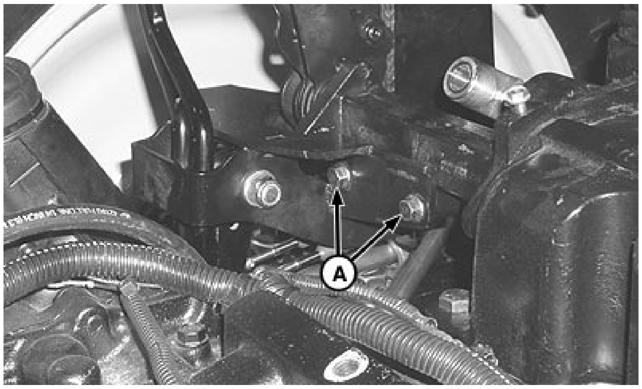
A—Steel Nut (Lower)
B—Aluminum Nut (Upper)



OUO1026,0000009 –19–31AUG04–4/13

13. Remove two cap screws (A) and SCV control lever support, if equipped.

A—Cap Screws

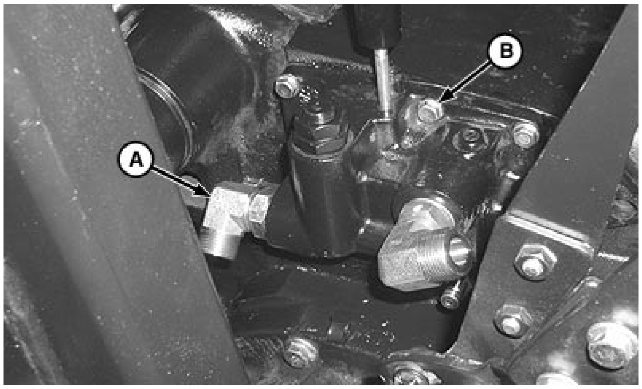


OUO1026,0000009 –19–31AUG04–5/13

NOTE: Angle of fitting (A) may vary depending on SCV configuration machine is equipped with.

14. Remove fitting (A), cap screws (B), and rockshaft control valve inlet housing.

A—Fitting
B—Cap Screw (6 used)



Continued on next page

OUO1026,0000009 –19–31AUG04–6/13

CAUTION: The approximate weight of the rockshaft case assembly is 82 kg (180 lb).

NOTE: If rockshaft case is to be turned over for service, remove rear SCV(s), if equipped.

15. Attach lifting slings to rockshaft arms and lifting device. Remove eleven cap screws and rockshaft case assembly.

16. Make repairs as necessary. (See Inspect and Repair Rockshaft Control Assembly—Straddle Mount in Section 70, Group 10.)

17. Clean mating surfaces of rockshaft case and differential housing using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

LV10292 –UN–15SEP04

OUO1026,0000009 –19–31AUG04–7/13

18. Install rockshaft case. Install and tighten cap screws (A) to specification.

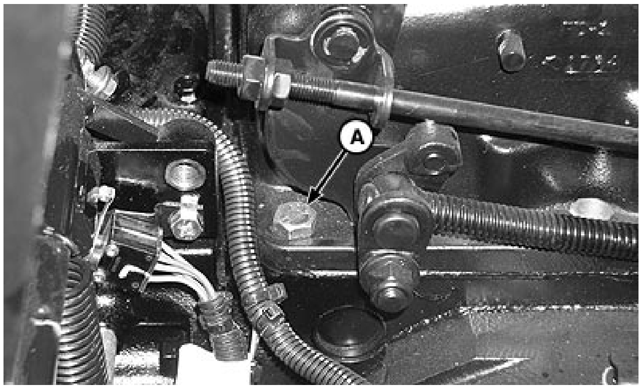
Specification

Rockshaft Case-to-Differential Housing Cap Screws—Torque	125 N•m (92 lb-ft)

19. Install rockshaft control valve and inlet housing. Tighten cap screws (A) to specification.

Specification

Inlet Housing Mounting Cap Screws—Torque	35 N•m (26 lb-ft)



LV10493 –UN–15SEP04

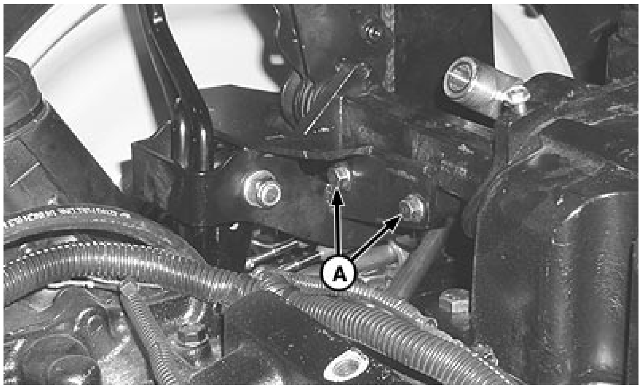
A—Cap Screw (11 used)

Continued on next page

OUO1026,0000009 –19–31AUG04–8/13

20. Install rear SCV control lever support using cap screws (A), if equipped.

A—Cap Screws



LV10281 –UN–10SEP04

OUO1026,0000009 –19–31AUG04–9/13

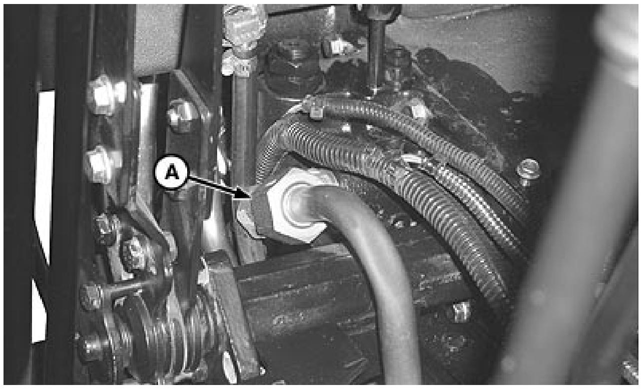
NOTE: SCV lines vary depending on what SCV configuration machine is equipped with.

21. Connect hydraulic lines (A and B) to RCV inlet housing. Tighten nuts to specification.

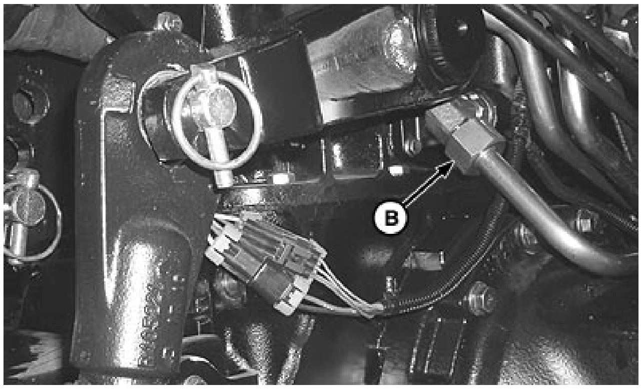
Specification

Hydraulic Line Nut—Torque .... 69 N•m (51 lb-ft)

A—Hydraulic Line (Front)
B—Hydraulic Line (Rear)



LV10278 –UN–10SEP04



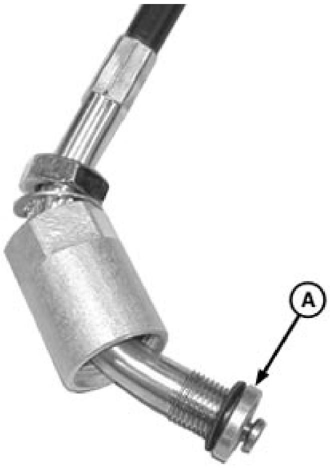
LV10279 –UN–10SEP04

Continued on next page

OUO1026,0000009 –19–31AUG04–10/13

22. Before installing SCV cables, inspect retaining nut (A). If loose, apply high strength Loctite 271 and tighten securely without damaging OD of retaining nut.

A—Retaining Nut



LV12307 –UN–17FEB05

OUO1026,0000009 –19–31AUG04–11/13

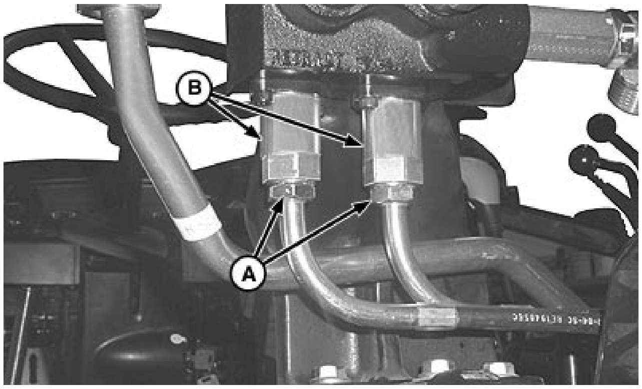
NOTE: Do not overtighten aluminum cable nut. Cable may bind.

23. Connect rear SCV control cables and tighten nuts (A and B).

Specification

SCV Control Cable Steel Nut—Torque .... 25 N•m (221 lb-in.)

A—Steel Nut (Lower)
B—Aluminum Nut (Upper)



LV10280 –UN–10SEP04

Continued on next page

OUO1026,0000009 –19–31AUG04–12/13

24. Connect hydraulic lines (A) to rear SCV(s), if equipped. Tighten fitting nuts to specification.

Specification

SCV Hydraulic Line Nut—Torque .... 69 N•m (51 lb-ft)

25. Connect lift links (B) and install center link.

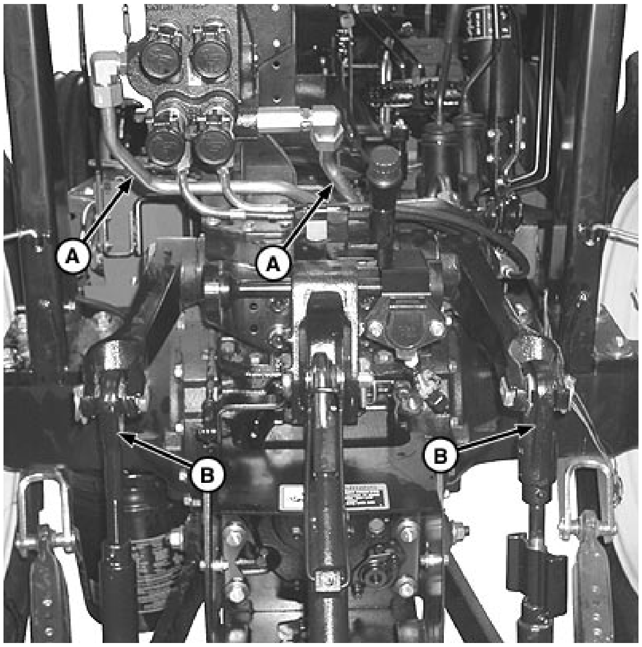
26. Connect wiring harness.

27. Install left- and right-side control consoles. (See Remove and Install Left-Side Control Console—Straddle Mount or Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)

28. Install seat and support. (See Remove and Install Seat and Support—Straddle Mount in Section 90, Group 05.)

29. Install fenders. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

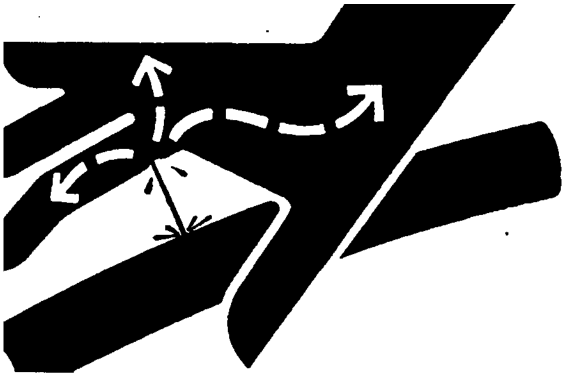
30. Install fuel tank. (See Remove, Inspect and Install Fuel Tank—Straddle Mount in Section 30, Group 05.)



LV10277 –UN–10SEP04

A—Hydraulic Lines
B—Lift Links

Remove and Install Rockshaft Case—Isolated Open Operator Station and Cab Tractors With Mechanical Hitch



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

1. Open rate-of-drop valve and lower rockshaft arms completely.

NOTE: It is not necessary to remove cab or platform to remove rockshaft case. Platform shown removed for clarity.

2. Move SCV levers and Mid-Mount joystick through all positions, if equipped.

Continued on next page

OUO1082,00002C6 –19–20SEP04–1/3

NOTE: Isolated open operator station with rear SCV and Mid-Mount shown. Tractors with other options are similar.

3. Tag and disconnect all hydraulic lines (D) from inlet housing (A).

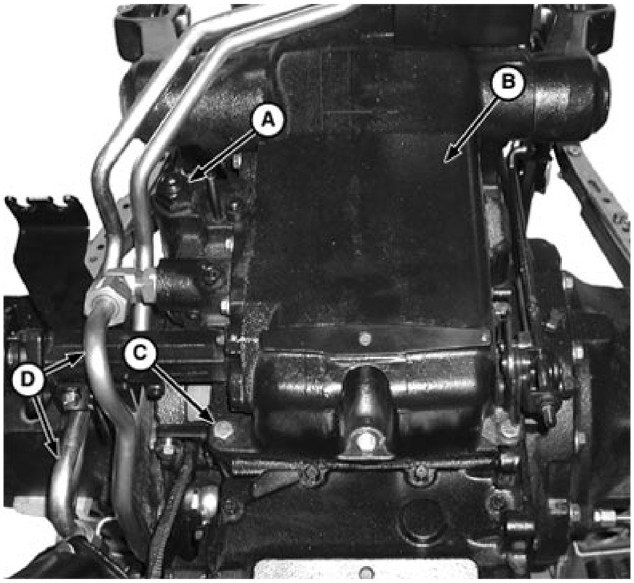
4. Remove rear hydraulic lines (E), if equipped.

5. Remove three cap screws (F) and rear SCV bracket, if equipped.

6. Disconnect lift links (H) and remove center link (G).

7. Remove rate-of-drop knob from valve stem.

8. Remove six cap screws and inlet housing (A).



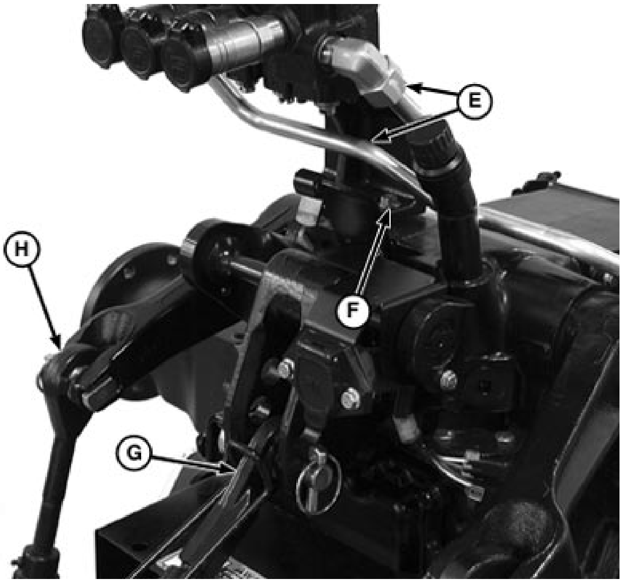
LV10595 –UN–09DEC04

CAUTION: The approximate weight of the rockshaft case assembly is 82 kg (180 lb).

9. Remove eleven cap screws (C) and rockshaft case assembly (B).

10. Make repairs as necessary. (See Inspect and Repair Rockshaft Control Assembly—Isolated Open Operator Station and Cab Tractors in Section 70, Group 10.)

11. Clean mating surfaces of rockshaft case and differential housing using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.



LV10596 –UN–17SEP04

A—Inlet Housing
B—Rockshaft Case Assembly
C—Cap Screw (11 used)
D—Hydraulic Lines
E—Hydraulic Lines
F—Cap Screw (3 used)
G—Center Link
H—Lift Link (2 used)

Continued on next page

OUO1082,00002C6 –19–20SEP04–2/3

12. Install rockshaft case assembly (B) and cap screws (C). Tighten cap screws to specification.

Specification

Rockshaft Case-to-Differential Housing Cap Screws—Torque .... 125 N•m (92 lb-ft)

13. Clean mating surfaces of inlet housing and rockshaft case using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

14. Apply Thread Lock and Sealer (Medium Strength) to threads of inlet housing cap screws.

15. Install inlet housing (A) using six cap screws. Tighten cap screws to specification.

Specification

Inlet Housing Cap Screws—Torque .... 30 N•m (22 lb-ft)

16. Connect hydraulic lines (D) to inlet housing (A). Tighten nuts to specification.

Specification

Hydraulic Line Nut—Torque .... 69 N•m (51 lb-ft)

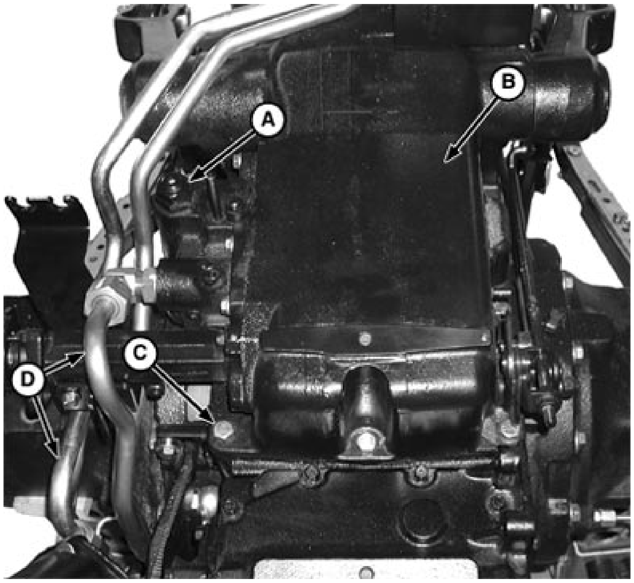
17. Install rear SCV bracket and three cap screws (F), if equipped.

18. Install rear hydraulic lines (E), if equipped. Tighten nuts to specification.

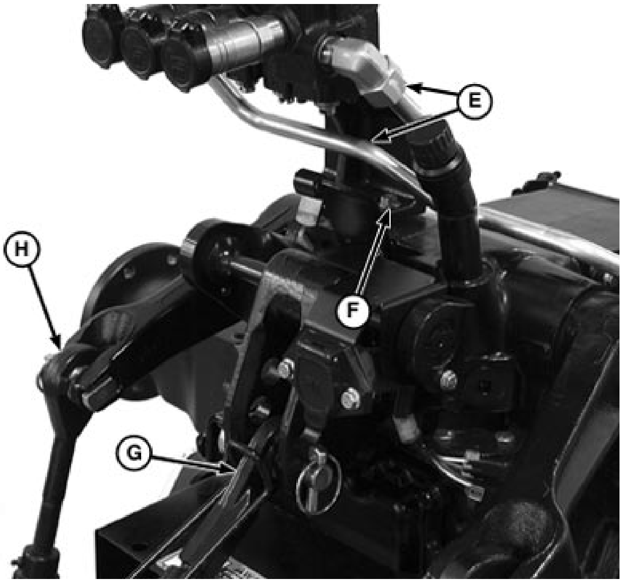
Specification

Hydraulic Line Nut—Torque .... 69 N•m (51 lb-ft)

19. Install lift links (H) and center link (G).



LV10595 –UN–09DEC04

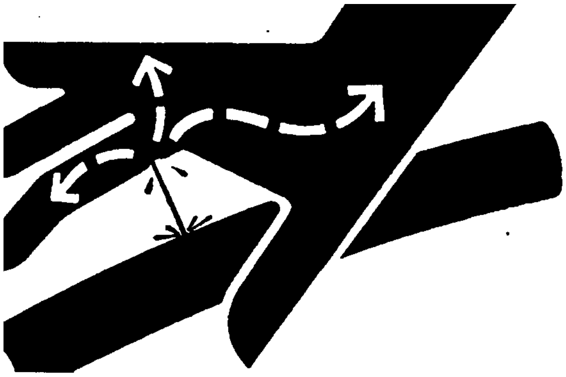


LV10596 –UN–17SEP04

A—Inlet Housing
B—Rockshaft Case Assembly
C—Cap Screw (11 used)
D—Hydraulic Line
E—Hydraulic Line
F—Cap Screw (3 used)
G—Center Link
H—Lift Link (2 used)

OUO1082,00002C6 –19–20SEP04–3/3

Remove and Install Rockshaft Case—All Tractors With Electro-Hydraulic Hitch



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

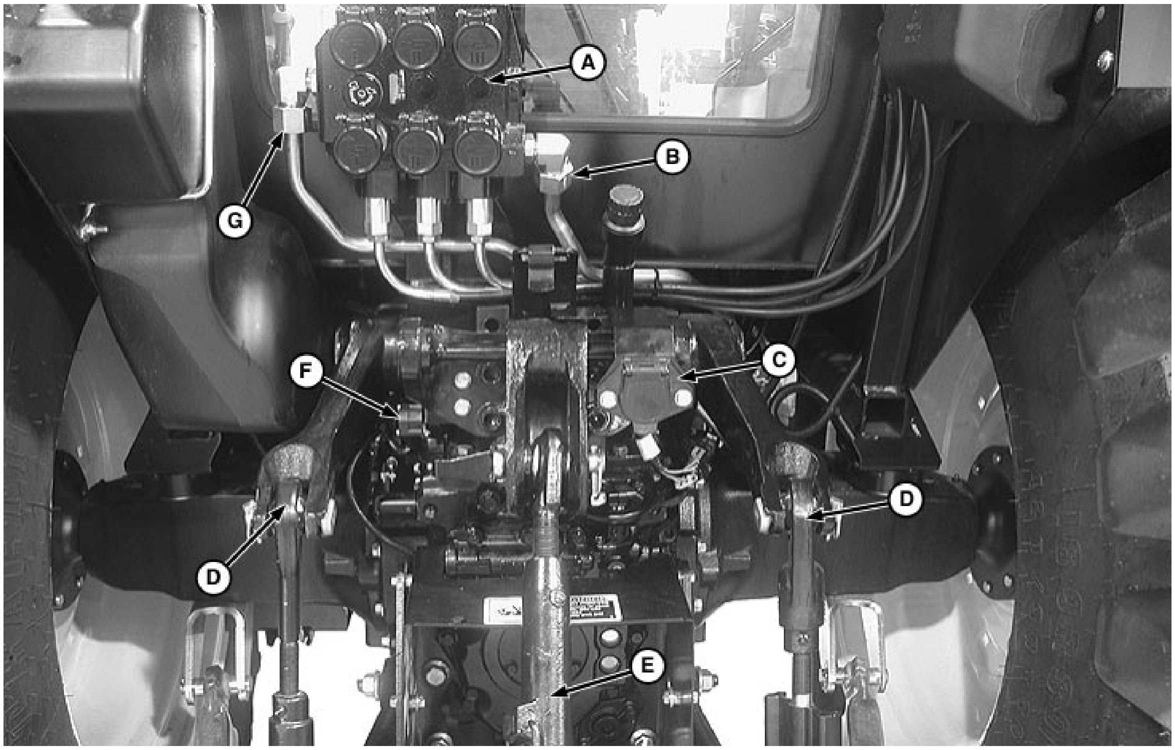
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

NOTE: Cab tractor shown. Procedure for isolated open operator station tractor is similar.

1. Remove rockshaft control valve. (See Remove and Install Rockshaft Control Valve—All Tractors With Electro-Hydraulic Hitch in Section 70, Group 10.)

Continued on next page

OUO1026,0001D57 –19–05OCT04–1/4



A—SCV Assembly
B—Hydraulic Line
C—7-Pin Connector
D—Lift Links
E—Center Link
F—Hitch Position Sensor
G—Hydraulic Line

2. Remove hydraulic line (G) and disconnect line (B) at both ends.

NOTE: It is not necessary to disconnect control cables from SCVs.

3. Remove SCV assembly (A) and bracket from rockshaft case. Use wire or rope to support assembly and avoid damage to cables.
4. Disconnect lift links (D) from lift arms.
5. Remove center link (E).
6. Disconnect electrical connector at hitch position sensor (F).
7. Disconnect 7-pin connector (C) from tractor harness. Move harness clear of rockshaft case.

Continued on next page

8. Remove eleven rockshaft case cap screws (A).

9. Attach lifting sling and hoist to lift arms (B).

10. Remove rockshaft case, being careful not to damage electrical harness or hitch linkages.

11. Repair or replace parts as necessary.

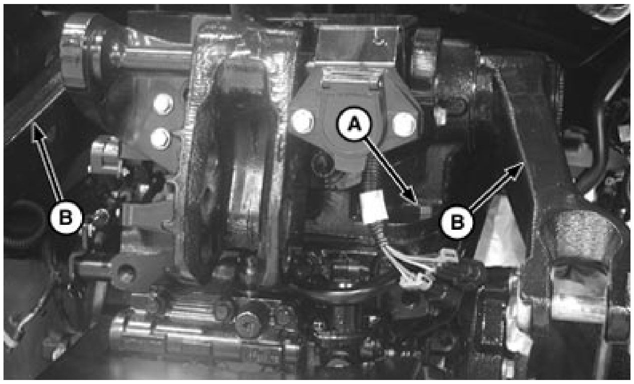
12. Clean mating surfaces of rockshaft case and differential housing using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

13. Position rockshaft case on differential housing. Keep assembly level when moving into position to avoid contact with gasket.

14. Install 11 rockshaft case-to-differential housing cap screws and tighten to specification.

Specification

Rockshaft Case-to-Differential
Housing Cap Screws—Torque..................................... 125 N•m (92 lb-ft)

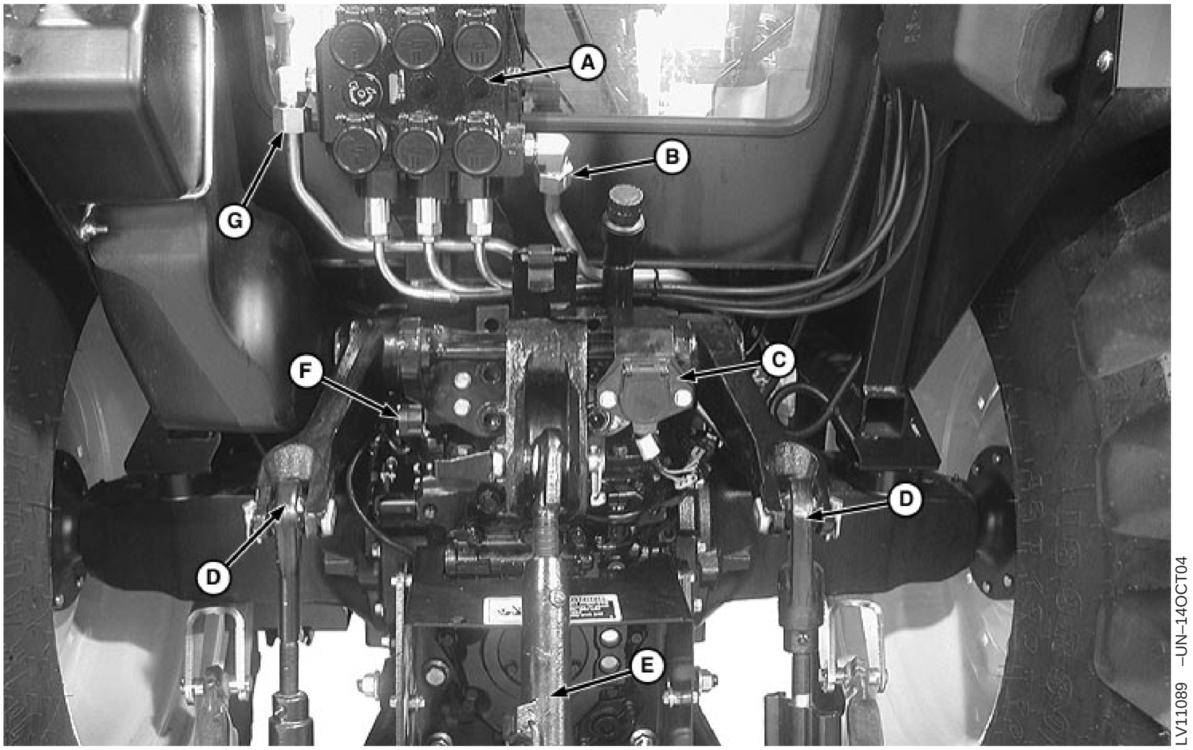


LV11090 –UN–14OCT04

A—Cap Screw (11 used)
B—Lift Arms

Continued on next page

OUO1026,0001D57 –19–05OCT04–3/4



A—SCV Assembly
B—Hydraulic Line
C—7-Pin Connector
D—Lift Links
E—Center Link
F—Hitch Position Sensor
G—Hydraulic Line

15. Install center link (E).

16. Connect lift links (D).

17. Connect tractor harness to hitch position sensor (F) and 7-pin connector (C).

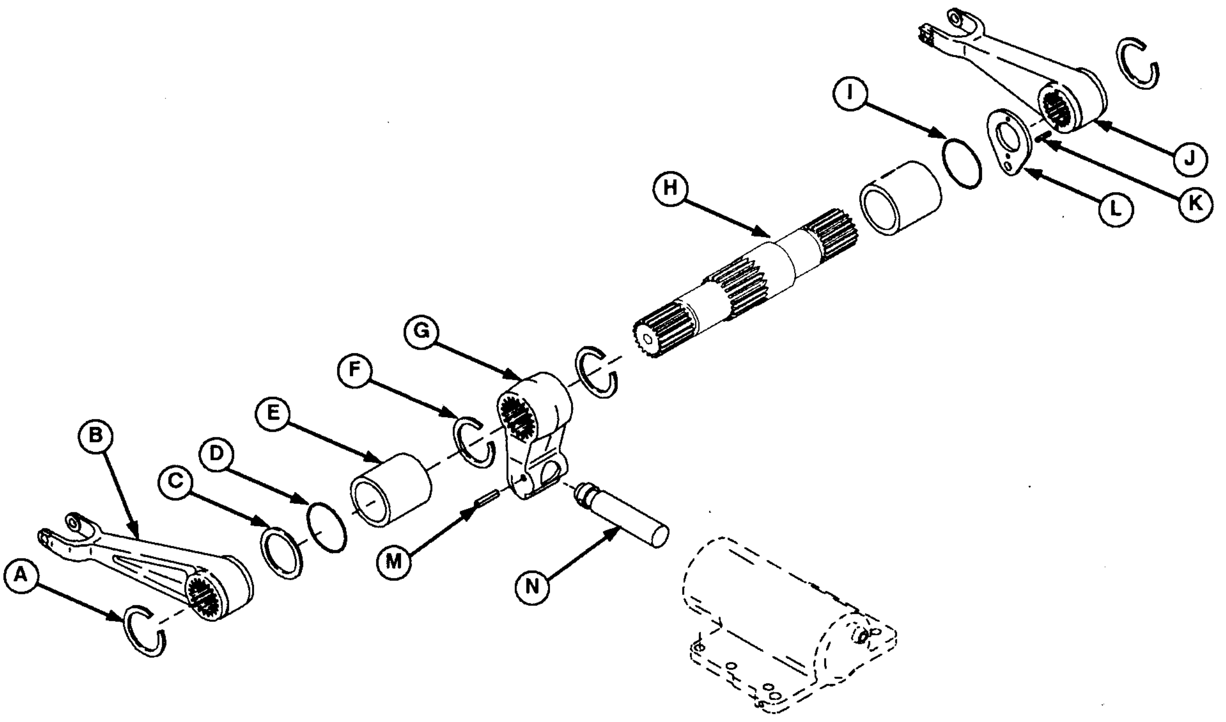
18. Install SCV assembly (A) and bracket.

19. Connect hydraulic line (B) and install hydraulic line (G).

20. Install rockshaft control valve. (See Remove and Install Rockshaft Control Valve—All Tractors With Electro-Hydraulic Hitch in Section 70, Group 10.)

21. Install any harness or cable tie bands removed during disassembly.

Remove, Inspect, and Install Rockshaft Lift Arms



A—Retaining Ring (2 used)
B—Right Lift Arm
C—Washer
D—O-Ring
E—Bushing (2 used)
F—Retaining Ring (2 used)
G—Crank
H—Rockshaft
I—O-Ring
J—Left Lift Arm
K—Spring Pin (2 used)
L—Plate
M—Spring Pin
N—Piston Rod

1. Remove rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

2. Disconnect feedback linkage from plate (L).

NOTE: Although parts (B, G, H, and J) have indexed splines, these splines are difficult to locate. Index parts with a punch mark before disassembly to aid in correct alignment of these parts during assembly.

3. Use a punch to index parts (B, G, H, and J).

4. Remove retaining rings (A and F).

5. Remove and inspect all parts for wear or damage. Replace as necessary.

NOTE: Bushings (E) are pressed in rockshaft case.

6. Replace bushings (E) using a bushing driver set. Press new bushings into rockshaft case so bushing outer edge is at least 7 mm (0.283 in.) below edge of bore.

Specification

Rockshaft Bushing Outer Edge-to-Edge of Bore—Distance .... 7 mm (0.283 in.)

7. Apply clean transmission/hydraulic oil to all internal parts.

Continued on next page

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: Use alignment marks made earlier to aid in assembly.

8. Assemble all parts.

9. Connect feedback link to plate (L).

10. Install rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

OUO1026,000C356 –19–02SEP04–2/2

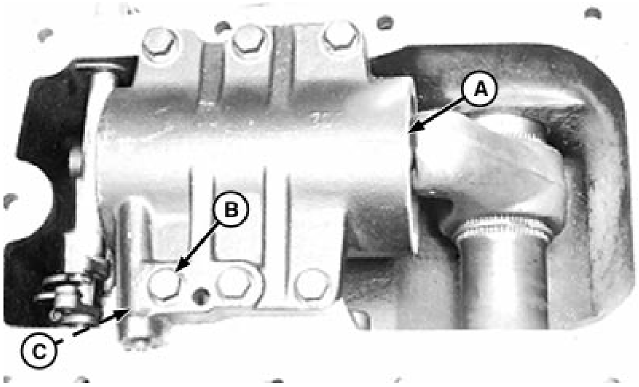
Remove, Inspect, and Install Rockshaft Piston and Cylinder

1. Remove rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)

2. Remove six cap screws (B).

3. Remove cylinder (A).

4. Remove O-ring (C).



LV10497 –UN–15SEP04

A—Rockshaft Cylinder
B—Cap Screw (6 used)
C—O-Ring

Continued on next page

OUO1026,000C357 –19–02SEP04–1/3

5. Remove piston (B).

6. Remove plug (D) to check oil passage (C) for debris or obstruction.

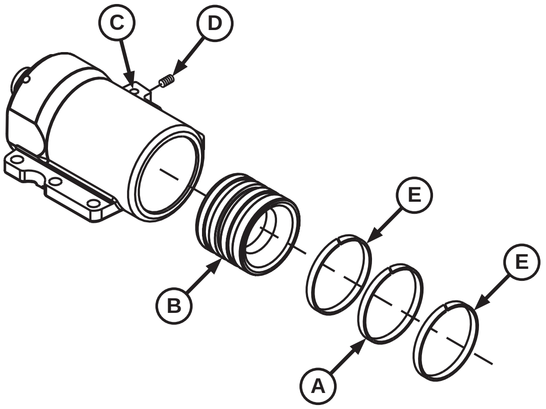
7. Clean and inspect all parts for wear or damage. Check piston and cylinder for cracks. Replace as necessary.

8. Replace seal ring (A) and wear rings (E).

9. Apply clean transmission/hydraulic oil to piston and cylinder walls.

10. Install piston (B).

11. Install plug (D).



LV10498 –UN–15SEP04

A—Seal Ring
B—Piston
C—Oil Passage
D—Plug
E—Wear Ring (2 used)

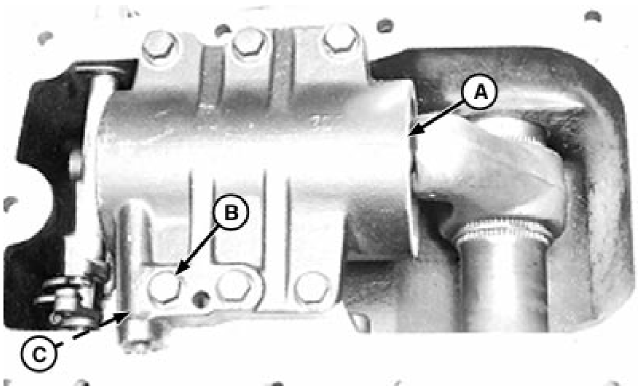
OUO1026,000C357 –19–02SEP04–2/3

12. Install new O-ring (C).

13. Install cylinder assembly (A).

14. Install cap screws (B).

15. Install rockshaft case. (See Remove and Install Rockshaft Case—Straddle Mount or Remove and Install Rockshaft Case-Isolated Open Operator Station and Cab Tractors With Mechanical Hitch in Section 70, Group 10.)



LV10497 –UN–15SEP04

A—Rockshaft Cylinder
B—Cap Screw (6 used)
C—O-Ring

OUO1026,000C357 –19–02SEP04–3/3

Inspect and Repair Draft Sensing Support Assembly

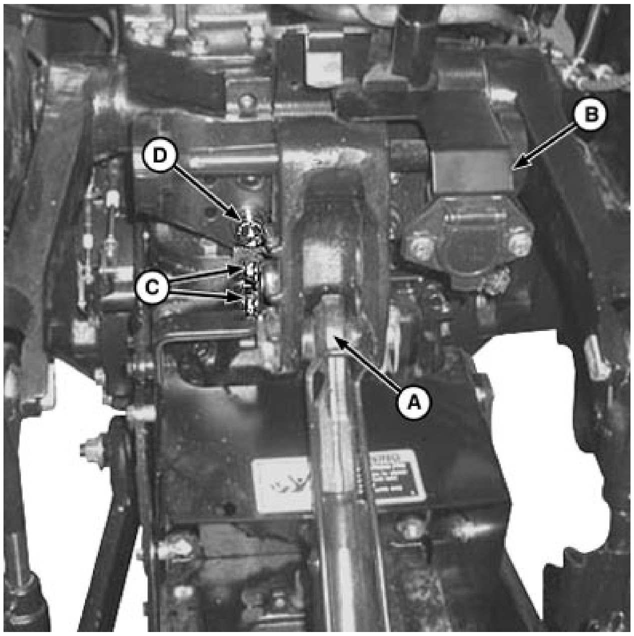
NOTE: Isolated open operator station shown. Straddle mount tractor and cab tractors are similar.

1. Open rate-of-drop valve and lower rockshaft arms completely.
2. Move draft sensing control lever full forward.
3. Remove center link (A).
4. Disconnect harness connectors and remove 7-pin connector and bracket (B).
5. Remove two cap screws (C) and remove draft-sensing rod bracket from support assembly.
6. Remove four socket head cap screws (D) and support assembly.
7. Inspect support assembly for wear or damage. Replace if necessary.
8. Install support assembly and four socket head cap screws (D). Tighten socket head cap screws to specification.

Specification

Draft Sensing Support Mounting
Socket Head Cap Screw—Torque .... 375 N•m (277 lb-ft)

9. Install two cap screws (C) and draft-sensing rod bracket.
10. Install 7-pin connector bracket (B) and connect harness connectors.
11. Install center link (A).
12. Adjust draft-sensing feedback linkage. (See Reference 270-15-019, Rockshaft Draft-Sensing Feedback Linkage Adjustment (Mechanical Hitch) in TM2197 Section 270, Group 19.)



LV10531 –UN–20SEP04

A—Center Link
B—7-Pin Bracket
C—Cap Screw (2 used)
D—Socket Head Cap Screw (4 used)

OUO1026,000C35E –19–07SEP04–1/1

Service Parts Kits—Triple SCVs

The following kits are available through your parts catalog:

Float Detent Kit

Float Detent Cap

Pressure Compensator Kit

Load Check Kit

Load Check Flow Control Valve Kit

Detent Knob Kit

Detent Valve Kit

Seal Kit—Complete Valve

OUO1073,0001D97 –19–07OCT04–1/1

Service Parts Kits—Dual SCVs

The following kits are available through your parts catalog:

Detent Kit

Load Check Kit

Seal Kit—Complete Valve

OUO1073,0001D98 –19–07OCT04–1/1

Other Material

Number	Name	Use
PM38654 (U.S.) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of SCV cable before tightening retaining nut
PM38654 (U.S.) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Used on threads of SCV socket head cap screws.
PM37477 (U.S.) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to end plate cap screw threads.

LOCTITE is a trademark of Loctite Corp.

JG31785,0000413 –19–18FEB05–1/1

Specifications

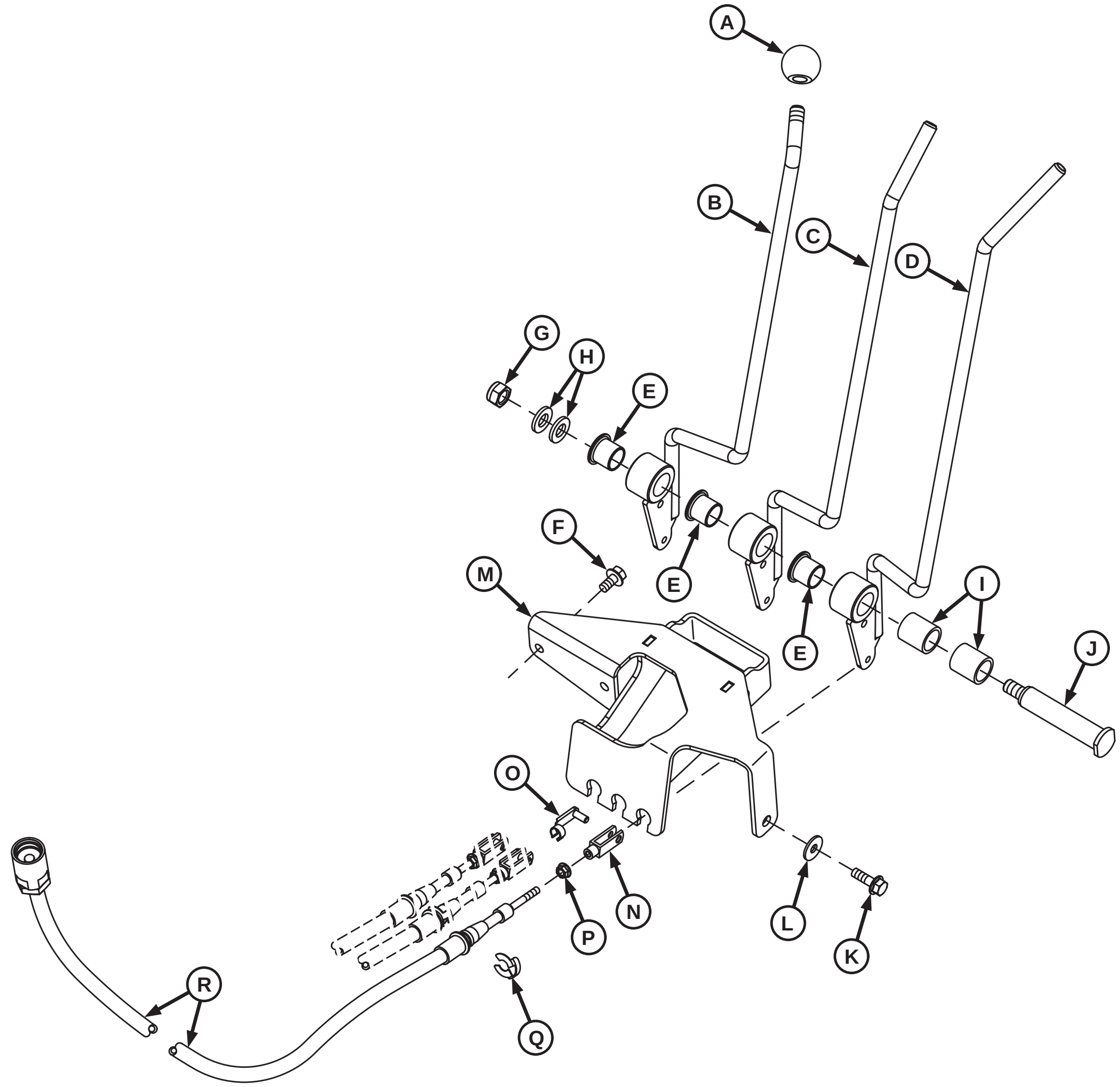
Item	Measurement	Specification
SCV Mounting Cap Screws	Torque	55 N•m (41 lb-ft)
Hydraulic Lines	Torque	102 N•m (75 lb-ft)
Cable Sleeve	Torque	16—19 N•m (144—168 lb-in.)
Cable Nut	Torque	16—19 N•m (144—168 lb-in.)
Socket Head Cap Screw	Torque	26—30 N•m (19—22 lb-ft)
Spool Cap Socket Head Cap Screw	Torque	12—15 N•m (106—133 lb-in.)
End Plate Socket Head Cap Screw	Torque	12—15 N•m (106—133 lb-in.)
SCV Fitting Plug	Torque	57 N•m (42 lb-ft)
Power Beyond Plug	Torque	54—61 N•m (40—45 lb-ft)
Load Check Cap	Torque	34—41 N•m (25—30 lb-ft)
Housing Plugs	Torque	20—27 N•m (15 lb-ft)
Load Check Flow Control Valve	Torque	34—41 N•m (25—30 lb-ft)
Compensator Valve	Torque	20—24 N•m (15—18 lb-ft)
Detent Valve	Torque	47—54 N•m (35—40 lb-ft)
Detent Knob Nut	Torque	4—5 N•m (35—44 lb-in.)
Valve Housing End Cap Socket Head Cap Screws	Torque	12—15 N•m (106—133 lb-in.)
Clevis End Adapter	Torque	26—30 N•m (19—22 lb-ft)
Spool End Cap Socket Head Cap Screws	Torque	12—15 N•m (106—133 lb-in.)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)
SCV Coupler	Torque	69 N•m (51 lb-ft)

Inspect and Repair SCV Levers and Linkage—Straddle Mount

1. Remove right-side control panel. (See Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)

Continued on next page

OUO6046,000A411 –19–28SEP04–1/4



LV10882 –UN–07OCT04

A—Knob (3 used)
B—SCV Lever (Outer)
C—SCV Lever (Middle)
D—SCV Lever (Inner)
E—Bushing (3 used)
F—Cap Screw (2 used)
G—Lock Nut
H—Washer
I—Bushing (2 used)
J—Cap Screw
K—Cap Screw
L—Washer
M—Bracket
N—Yoke (3 used)
O—Spring Locking Pin (3 used)
P—Nut (3 used)
Q—Retainer Clip (3 used)
R—Cable (3 used)

2. Inspect parts for wear or damage. Replace as necessary.

Continued on next page

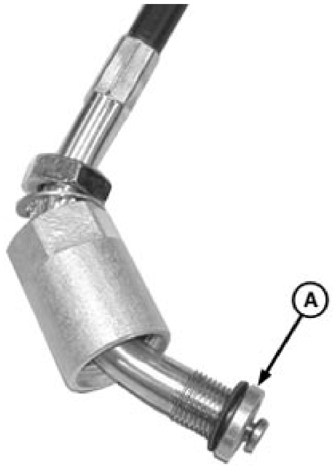
3. Install right-side control panel. (See Remove and Install Right-Side Control Console—Straddle Mount in Section 90, Group 06.)

OUO6046,000A411 –19–28SEP04–3/4

4. Before installing SCV cables, inspect retaining nut (A). If loose, apply high strength Loctite 271 and tighten securely without damaging OD of retaining nut.

5. Adjust control cables. (See Reference 270-15-014, Rear SCV Cable Adjustment-Straddle Mount Tractors in TM2197 Section 270, Group 15.)

A—Retaining Nut



LV12307 –UN–17FEB05

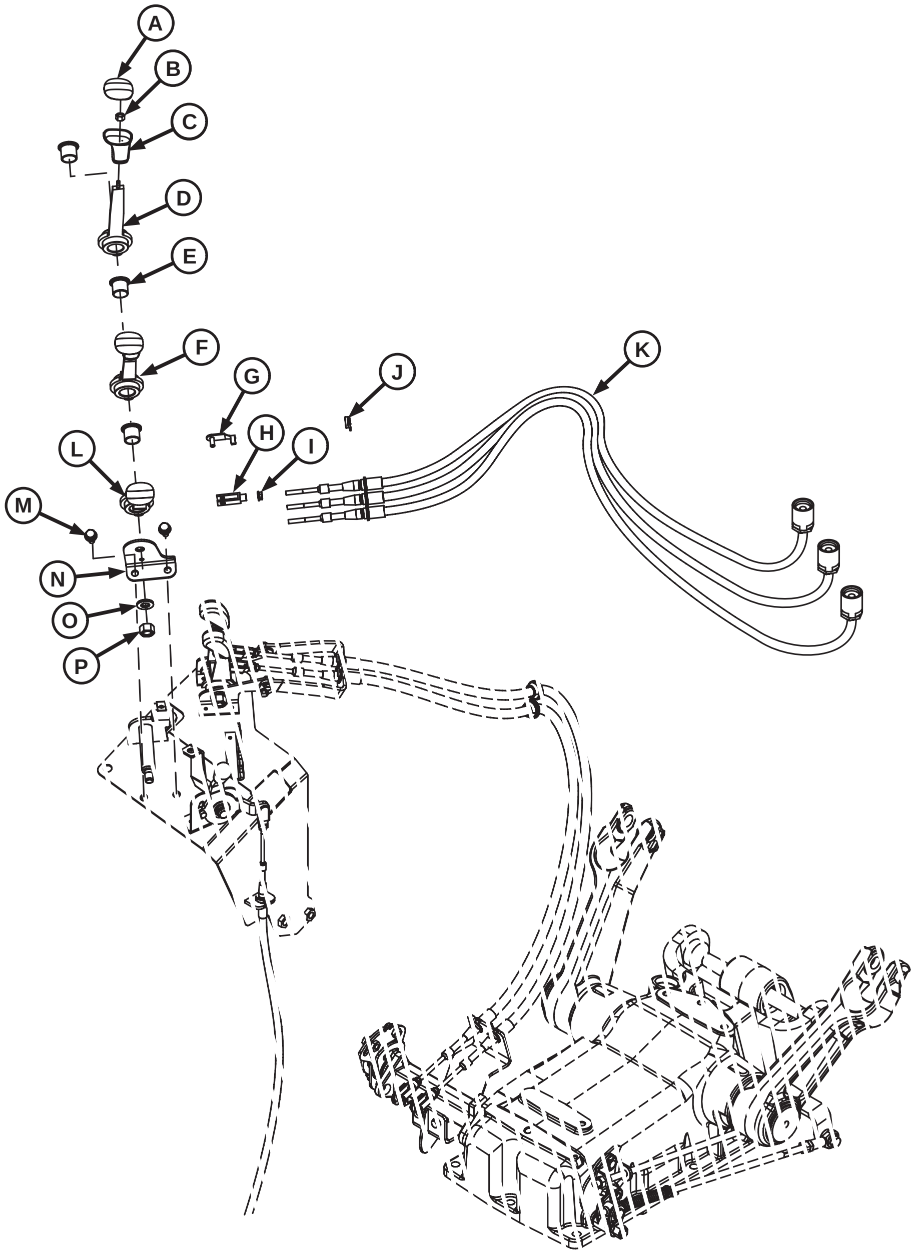
OUO6046,000A411 –19–28SEP04–4/4

Inspect and Repair SCV Levers and Linkage—Isolated Open Operator Station and Cab Tractors

1. Remove right-side control panel. (See Remove and Install Right-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)

Continued on next page

OUO6046,000A412 –19–28SEP04–1/4



LV10887 –UN–07OCT04

A—Cap (3 used)	**E—Bushing (3 used)**	**I—Nut (3 used)**	**M—Cap Screw (2 used)**
B—Nut (3 used)	**F—SCV II Lever**	**J—Retainer Clip (3 used)**	**N—Bracket**
C—Knob (3 used)	**G—Yoke Pin (3 used)**	**K—Cable (3 used)**	**O—Washer**
D—SCV III Lever	**H—Yoke (3 used)**	**L—SCV I Lever**	**P—Nut**

2. Inspect parts (A—P) for wear or damage.

3. Remove and replace parts as necessary.

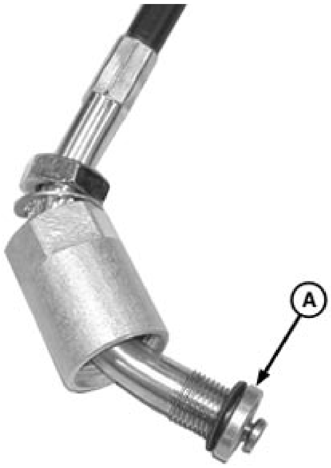
Continued on next page

4. Install right-side control panel. (See Remove and Install Right-Side Control Console—Isolated Open Operator Station Tractors or Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)

OUO6046,000A412 –19–28SEP04–3/4

5. Before installing SCV cables, inspect retaining nut (A). If loose, apply high strength Loctite 271 and tighten securely without damaging OD of retaining nut.

6. Adjust control cables. (See Reference 270-15-015, Rear SCV Cable Adjustment—Isolated Open Operator Station and Cab Tractors in TM2197 Section 270, Group 19.)

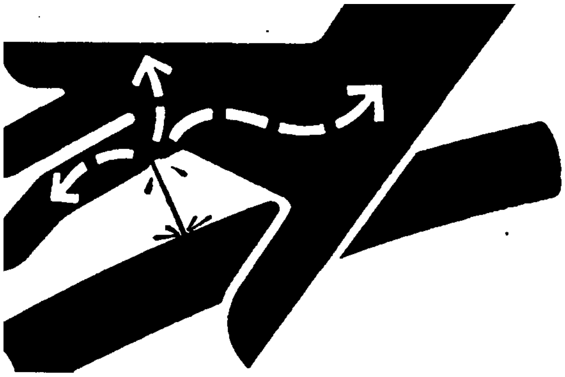


LV12307 –UN–17FEB05

A—Retaining Nut

OUO6046,000A412 –19–28SEP04–4/4

Remove and Install Dual or Triple Selective Control Valve (SCV)


X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

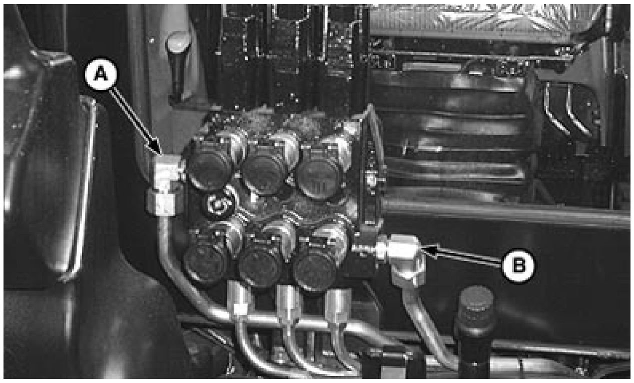
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

NOTE: The triple SCV is shown. For dual SCV removal and installation use the same procedures.

1. Move SCV controls through all positions.

NOTE: A small amount of fluid may be in the SCV and lines. Place a rag under the SCV to catch any fluid when hydraulic lines are removed.

2. Disconnect hydraulic lines (A and B) from valve fittings.



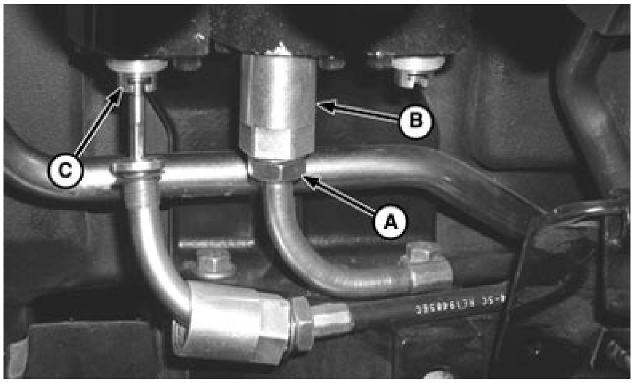
LV10888 –UN–07OCT04

A—Hydraulic Line (Pressure)
B—Hydraulic Line (Return)

OUO6046,000A02D –19–30SEP04–1/6

3. Loosen cable nut (A). Loosen and remove cable sleeve (B). Unhook cable from spool (C).

A—Cable Nut
B—Cable Sleeve
C—Spool



LV10889 –UN–07OCT04

Continued on next page

OUO6046,000A02D –19–30SEP04–2/6

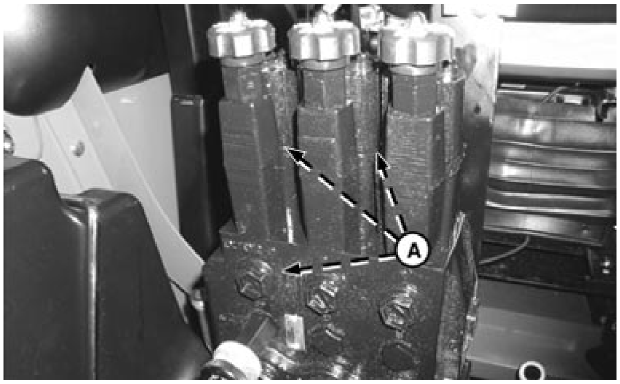
4. Remove SCV mounting cap screws (A) from back side of SCV and remove SCV.

5. Repair or replace SCV. (See Disassemble, Inspect, and Assemble Dual Selective Control Valve (SCV) or Disassemble, Inspect, and Assemble Triple Selective Control Valve (SCV) in Section 70, Group 15.)

6. Secure SCV to bracket with cap screws (A) on back side of SCV. Tighten to specification.

Specification

SCV Mounting Cap Screws— Torque	55 N•m (41 lb-ft)



LV10890 –UN–01NOV04

A—Cap Screws (3 used)

OUO6046,000A02D –19–30SEP04–3/6

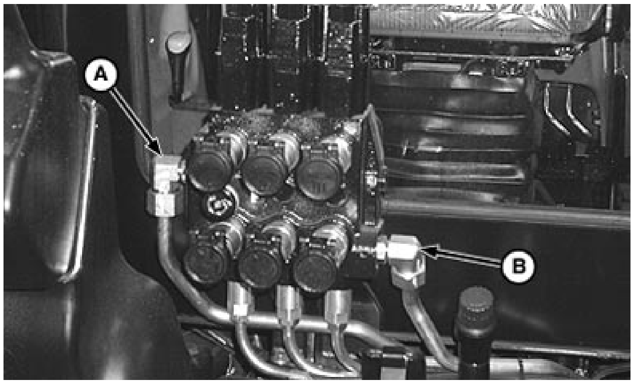
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

7. Connect hydraulic lines (A and B). Tighten to specification.

Specification

Hydraulic Lines—Torque	102 N•m (75 lb-ft)

A—Hydraulic Line (Pressure)
B—Hydraulic Line (Return)



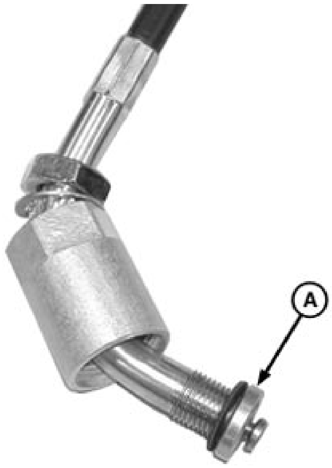
LV10888 –UN–07OCT04

Continued on next page

OUO6046,000A02D –19–30SEP04–4/6

8. Before installing SCV cables, inspect retaining nut (A). If loose, apply high strength Loctite 271 and tighten securely without damaging OD of retaining nut.

A—Retaining Nut



LV12307 –UN–17FEB05

OUO6046,000A02D –19–30SEP04–5/6

9. Slide cable end into spool slot (C).

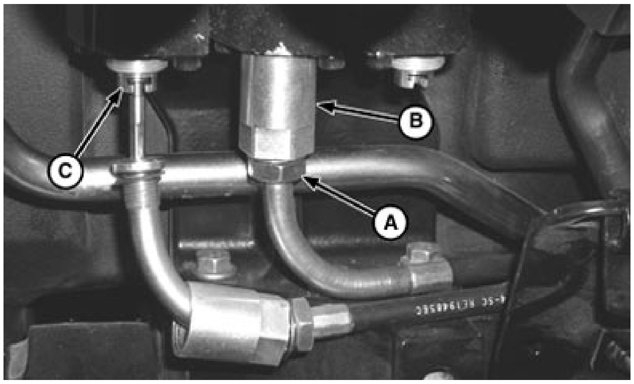
10. Install cable sleeve (B) and cable nut (A). Tighten cable sleeve and nut to specification.

Specification

Cable Nut—Torque	16—19 N•m (144—168 lb-in.)
Cable Sleeve—Torque	16—19 N•m (144—168 lb-in.)

11. Start engine and operate SCV levers. Check all connections for leaks.

A—Cable Nut
B—Cable Sleeve
C—Spool



LV10889 –UN–07OCT04

OUO6046,000A02D –19–30SEP04–6/6

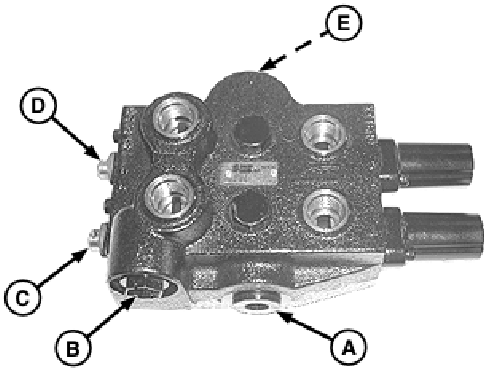
Disassemble, Inspect, and Assemble Dual Selective Control Valve (SCV)

IMPORTANT: Remove dirt, grease, and debris from valve before disassembling to prevent contamination.

NOTE: Disassembly of a dual SCV shown. Disassembly of a single SCV is the same.

1. Remove SCV couplers (shown removed).

2. Remove return-to-sump fitting and pressure inlet fitting, if still installed, and fitting plug (A).



LV10917 –UN–07OCT04

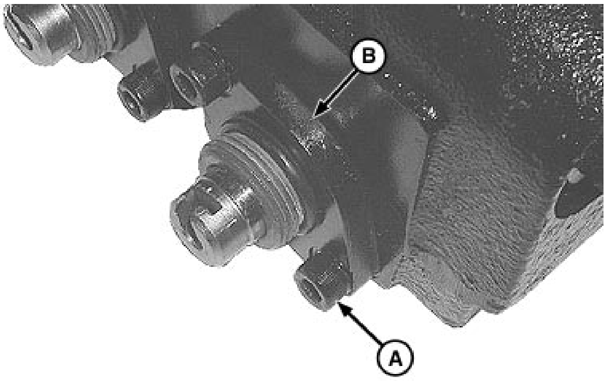
A—Power Beyond Port
B—Return-to-Sump Outlet
C—Float Spool
D—Float Spool
E—Pressure Inlet

OUO6046,000A02E –19–30SEP04–1/9

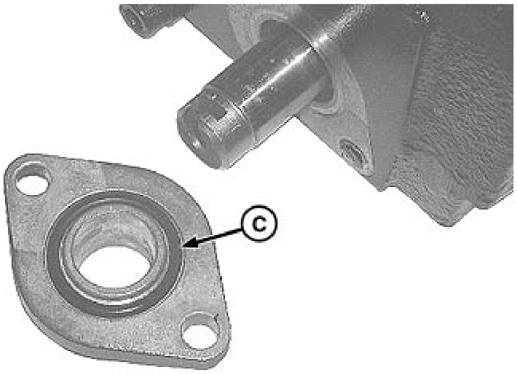
3. Remove socket head cap screws (A) and end plate (B).

4. Remove O-ring (C).

A—Socket Head Cap Screw (2 used)
B—End Plate
C—O-Ring



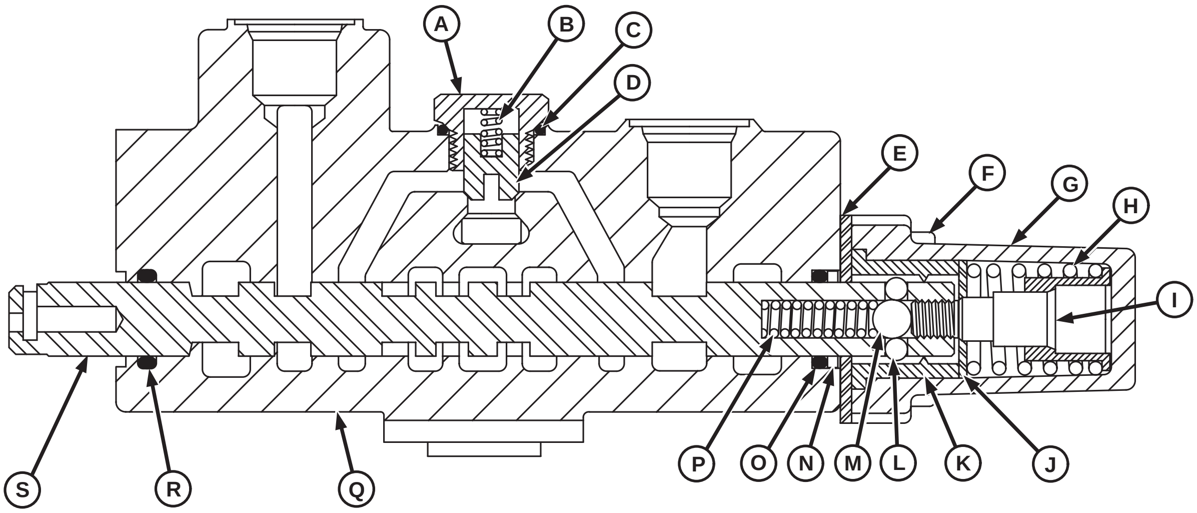
LV10920 –UN–07OCT04



LV10921 –UN–07OCT04

Continued on next page

OUO6046,000A02E –19–30SEP04–2/9



LV10918 –UN–07OCT04

A—Cap
B—Spring
C—O-Ring
D—Load Check
E—Seal Plate
F—Socket Head Cap Screw (2 used)
G—Cap
H—Spring
I—Socket Head Cap Screw
J—Washer
K—Detent
L—Detent Ball (4 used)
M—Pilot Ball
N—Backup Ring
O—O-Ring
P—Detent Spring
Q—SCV Housing
R—O-Ring
S—Spool

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation.

Detents are matched to spool type. Make sure detents are installed with the spools they are removed from.

NOTE: Parts (A—D) and (E—P) are serviced as separate assemblies and are replaced as kits only.

5. Remove parts (A—D).

6. Remove socket head cap screws (F) and cap (G).

NOTE: Seal plate (E) may come off with spool assembly.

7. Remove spool (S) and parts (H—P) as an assembly from SCV housing (Q).

8. Remove seal plate (E).

9. Remove backup ring (N) and O-rings (O and R).

Continued on next page

10. Hold end of spool with a wrench and remove parts (H—M) and (P).

11. Inspect all parts for wear or damage. Replace as necessary.

12. Lightly coat detent spring (P), pilot ball (M) and detent balls (L) with multipurpose grease.

13. Install detent spring (P), pilot ball (M) and detent balls (L) into spool.

OUO6046,000A02E –19–30SEP04–4/9

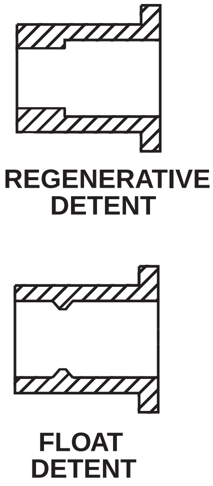
NOTE: Notched detent is used on 6-groove float spool. Stepped detent is used on 5-groove regenerative spool.

14. Place detent on spool.

15. Using a small allen wrench (A) gently push in pilot ball and detent spring.

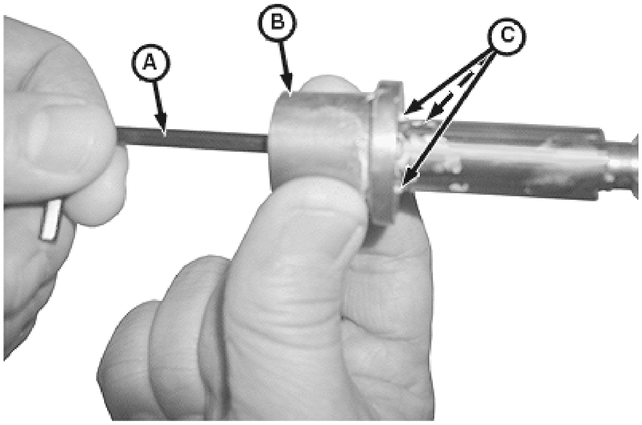
16. Carefully slide detent (B) over detent balls (C).

A—Allen Wrench
B—Detent
C—Detent Ball (4 used)



LV7038

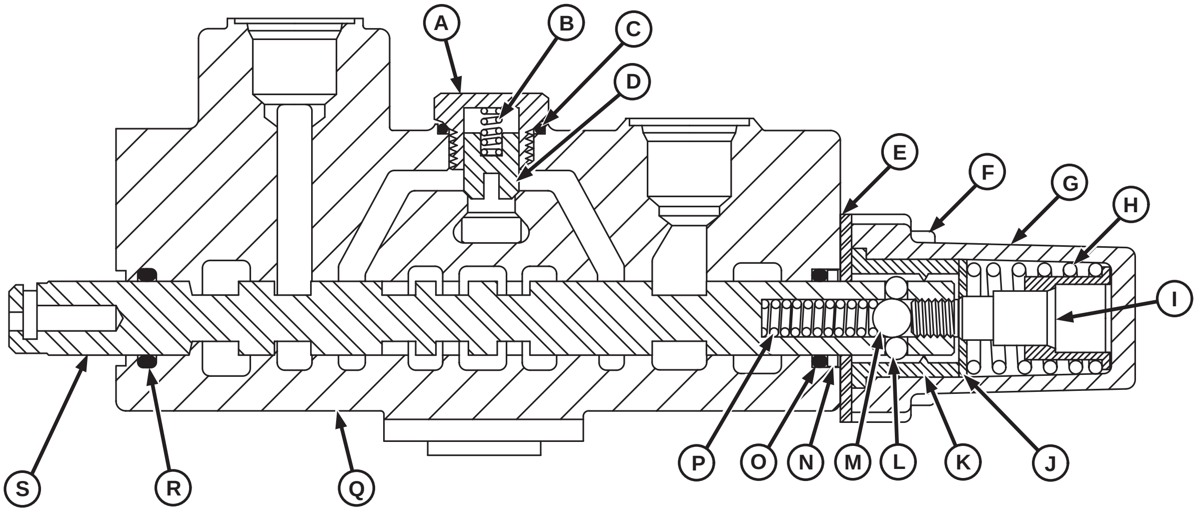
LV7038 –19–29MAY01



LV7039 –UN–29MAY01

Continued on next page

OUO6046,000A02E –19–30SEP04–5/9



LV10918 –UN–07OCT04

A—Cap	**F—Socket Head Screw (2 used)**	**J—Washer**	**O—O-Ring**
B—Spring	**G—Cap**	**K—Detent**	**P—Detent Spring**
C—O-Ring	**H—Spring**	**L—Detent Ball (4 used)**	**Q—SCV Housing**
D—Load Check	**I—Socket Head Cap Screw**	**M—Pilot Ball**	**R—O-Ring**
E—Seal Plate		**N—Backup Ring**	**S—Spool**

17. Install parts (H—J). Tighten socket head cap screw (I) to specification.

Specification

Socket Head Cap Screw—Torque.. 26—30 N•m (19—22 lb-ft)

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

18. Install new O-rings (R and O) and backup ring (N).

19. Install seal plate (E).

20. Coat spool and bore with clean transmission/hydraulic oil.

21. Install spool.

22. Lightly coat detent assembly with multipurpose grease.

Continued on next page

23. Apply MT1247 Locking Liquid, supplied with repair kit, to threads of socket head cap screws (F).

24. Install cap (G) using socket head cap screws (F). Tighten screws to specification.

Specification

Spool Cap Socket Head Cap Screw—Torque .... 12—15 N•m (106—133 lb-in.)

25. Install parts (A—D). Tighten cap (A) to specification.

Specification

Load Check Cap—Torque .... 34—41 N•m (25—30 lb-ft)

26. Install new O-ring (C) on load check cap (A).

27. Lubricate O-ring and install load check valve (D), spring (B), and load check cap. Tighten to specification.

Specification

Load Check Cap—Torque .... 34—41 N•m (25—30 lb-ft)

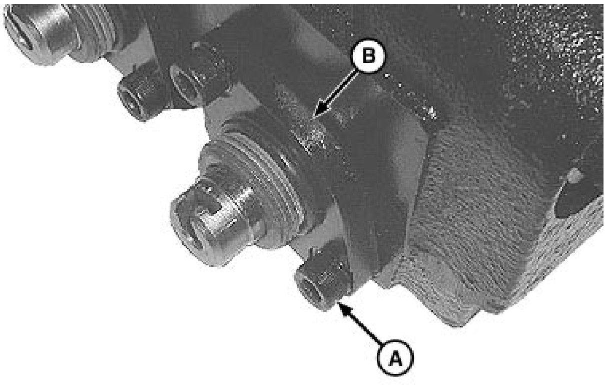
OUO6046,000A02E –19–30SEP04–7/9

28. Replace O-ring (C).

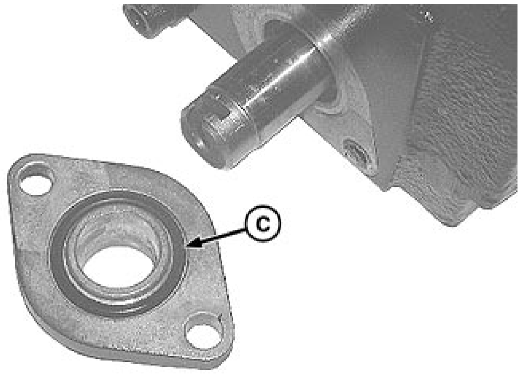
29. Install end cap (B). Apply medium strength thread lock to socket head cap screws (A). Tighten socket head cap screws to specification.

Specification

End Plate Socket Head Cap Screw—Torque.. 12—15 N•m (106—133 lb-in.)



LV10920 –UN–07OCT04



LV10921 –UN–07OCT04

A—Socket Head Cap Screw (2 used)
B—End Cap
C—O-Ring

Continued on next page

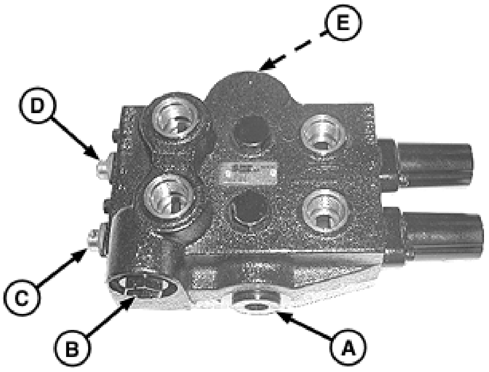
OUO6046,000A02E –19–30SEP04–8/9

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

30. Replace O-rings and install return-to-sump and pressure inlet fitting. Install fitting plug (A). Tighten plug to specification.

Specification	
SCV Fitting Plug—Torque	57 N•m (42 lb-ft)

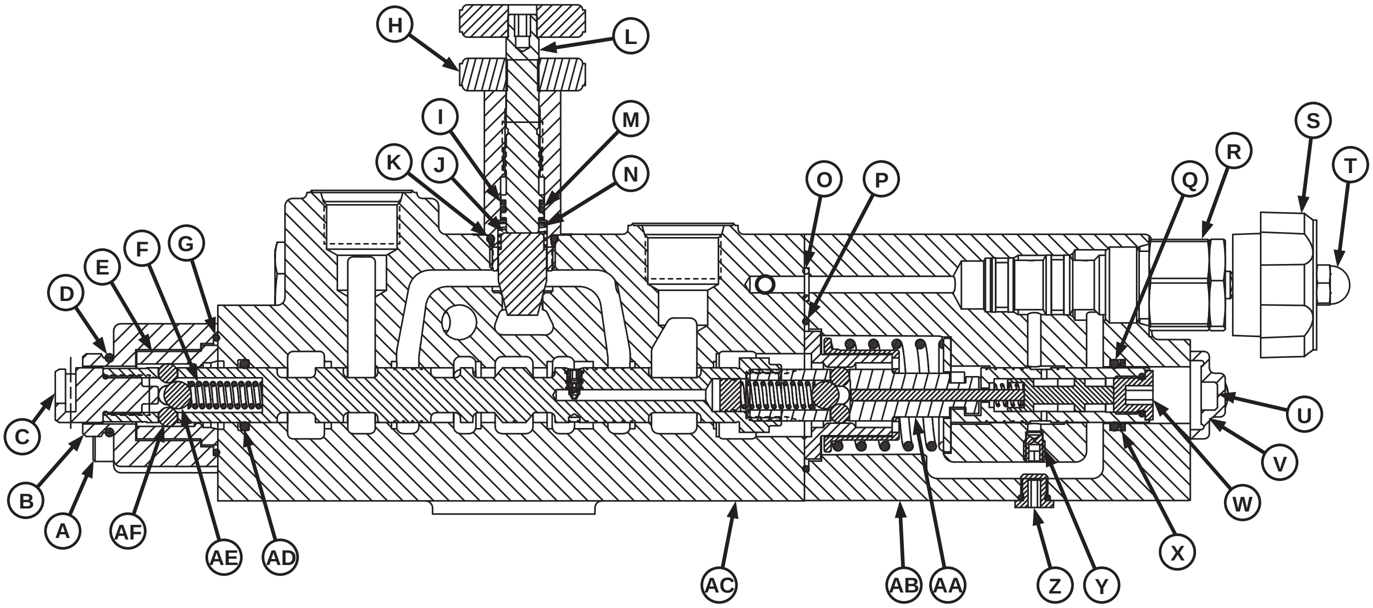


LV10917 –UN–07OCT04

A—Plug
B—Return-to-Sump
C—Float Spool
D—Float Spool
E—Pressure Inlet

OUO6046,000A02E –19–30SEP04–9/9

Triple Selective Control Valve (SCV) Cross-Sectional View



LV11088 –UN–01NOV04

A—Socket Head Cap Screw (2 used)
B—Spool End Cap
C—Clevis End Adapter
D—O-Ring
E—Detent Sleeve
F—Spring
G—O-Ring
H—Lock Nut

I—Backup Ring
J—Poppet
K—O-Ring
L—Stem
M—O-Ring
N—Spring
O—O-Ring
P—O-Ring

Q—O-Ring
R—Detent Valve
S—Detent Knob
T—Nut
U—Screw (2 used)
V—Cap
W—Socket Head Cap Screw
X—Backup Ring

Y—Orifice Plug
Z—Plug
AA—Spool Assembly
AB—Valve Housing
AC—Valve Block
AD—O-Ring
AE—Steel Ball
AF—Steel Ball (4 used)

OUO1073,0001D9B –19–07OCT04–1/1

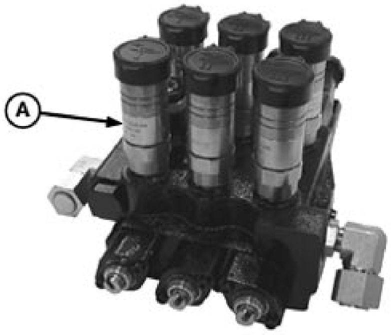
Disassemble, Inspect, and Assemble Triple Selective Control Valve (SCV)

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

IMPORTANT: Remove dirt, grease, and debris from valve before disassembling to prevent contamination.

1. Remove SCV couplers (A).



LV11102 –UN–19OCT04

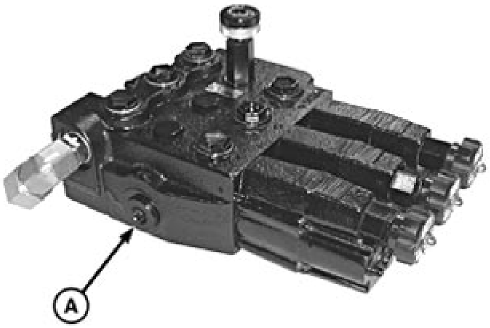
A—SCV Coupler (6 used)

OUO1073,0001D96 –19–07OCT04–1/16

2. Remove power beyond plug (A).
3. Install new O-ring on plug.
4. Lubricate O-ring and install plug. Tighten to specification.

Specification	
Power Beyond Plug—Torque	54—61 N•m (40—45 lb-ft)

A—Power Beyond Plug



LV11103 –UN–19OCT04

Continued on next page OUO1073,0001D96 –19–07OCT04–2/16

5. Remove load check cap (A), spring (B), and poppet (C).

6. Inspect components; replace as necessary.

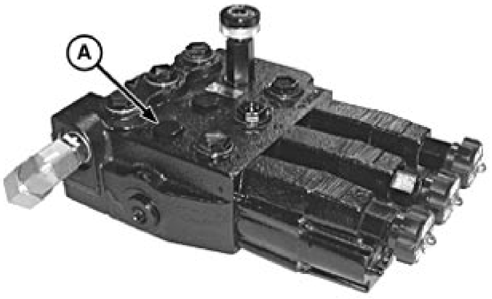
7. Install new O-ring on load check cap.

8. Lubricate O-ring and install poppet, spring and load check cap. Tighten to specification.

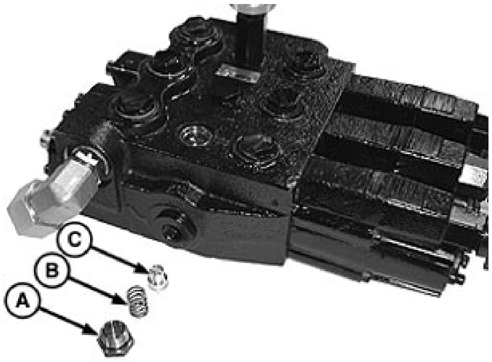
Specification	
Load Check Cap—Torque	34—41 N•m (25—30 lb-ft)

9. Repeat procedure for other load check cap.

A—Load Check Cap
B—Spring
C—Poppet



LV11105 –UN–19OCT04



LV11104 –UN–01NOV04

OUO1073,0001D96 –19–07OCT04–3/16

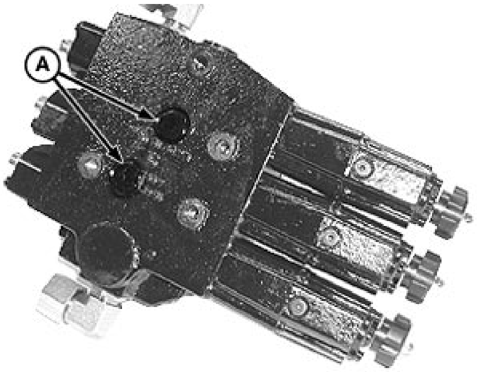
10. Remove plugs (A).

11. Install new O-ring on plug.

12. Lubricate O-ring and install plug. Tighten to specification.

Specification	
Housing Plugs—Torque	20—27 N•m (15 lb-ft)

A—Plugs



LV11106 –UN–19OCT04

Continued on next page

OUO1073,0001D96 –19–07OCT04–4/16

NOTE: O-ring (B) may be replaced individually. Valve internal O-rings and components are available as a repair kit.

13. Remove load check flow control valve assembly (A). If installing flow control valve repair kit proceed to step 16.

14. If not installing repair kit, install new O-ring (B).

15. Make sure spring (J) and poppet (K) are in place. Lubricate O-ring and install load check flow control valve. Tighten to specification.

Specification

Load Check Flow Control Valve—Torque .... 34—41 N•m (25—30 lb-ft)

16. Install backup ring (C) and O-ring (D) onto stem (E).

17. Install spacer, not shown, over end of stem with internal hex. Spacer sits on shoulder above O-ring.

18. Install stem into plug (G).

19. Install lock nut (H) on stem.

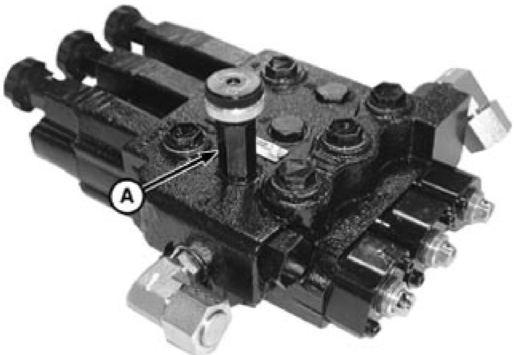
20. Install knob (I) onto knurled end of stem using a soft mallet.

21. Install poppet (K) and spring (J).

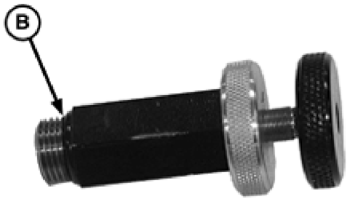
22. Install O-ring (F) on plug.

23. Lubricate O-ring and install load check flow control assembly. Tighten to specification.

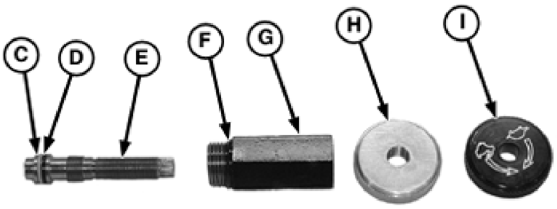
A—Load Check Flow Control Valve Assembly
B—O-Ring
C—Backup Ring
D—O-Ring
E—Stem
F—O-Ring
G—Plug
H—Lock Nut
I—Knob
J—Spring
K—Poppet



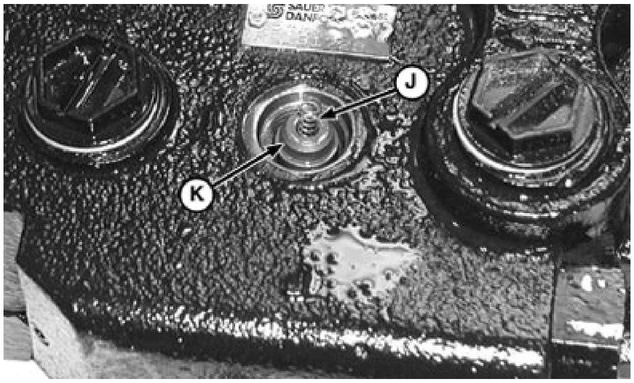
LV11107 –UN–19OCT04



LV11108 –UN–19OCT04



LV11109 –UN–19OCT04



LV11134 –UN–15OCT04

70
15
21

Continued on next page

Specification

Load Check Flow Control Valve—Torque .... 34—41 N•m (25—30 lb-ft)

OUO1073,0001D96 –19–07OCT04–6/16

NOTE: Individual seals on compensator valve are non-replaceable. If seal replacement is required, replace compensator valve assembly.

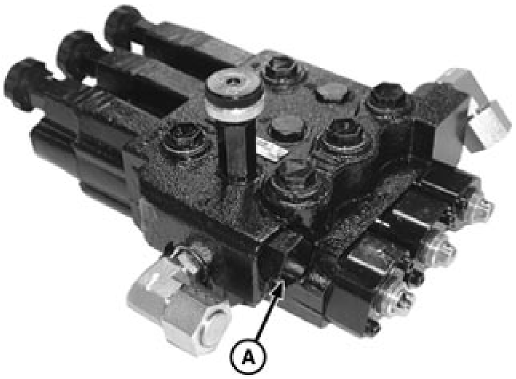
24. Remove compensator valve (A).

25. Lubricate O-ring and seals with clean oil and install compensator valve. Tighten to specification.

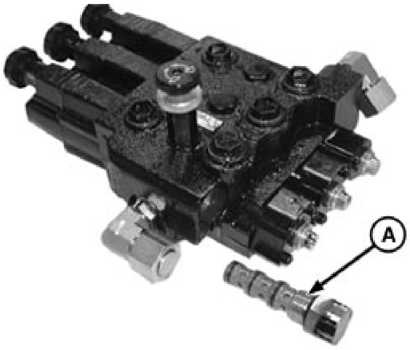
Specification

Compensator Valve—Torque........................... 20—24 N•m (15—18 lb-ft)

A—Compensator Valve



LV11110 –UN–19OCT04



LV11111 –UN–19OCT04

Continued on next page

OUO1073,0001D96 –19–07OCT04–7/16

NOTE: Individual seals on detent valve are non-replaceable. If seal replacement is required, replace detent valve assembly.

26. Remove nut (A), knob (B), and collet (C).

27. Remove detent valve (D) from valve housing.

28. Lubricate O-rings and seals with clean oil and install detent valve. Tighten to specification.

Specification

Detent Valve—Torque .... 47—54 N•m (35—40 lb-ft)

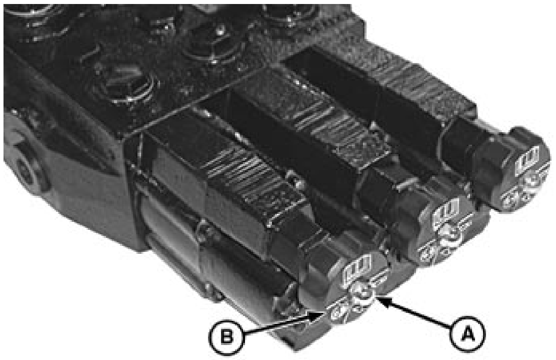
29. Apply MT1247 Locking Liquid, supplied with repair kit, to nut. Install collet, knob, and nut. Tighten nut to specification.

Specification

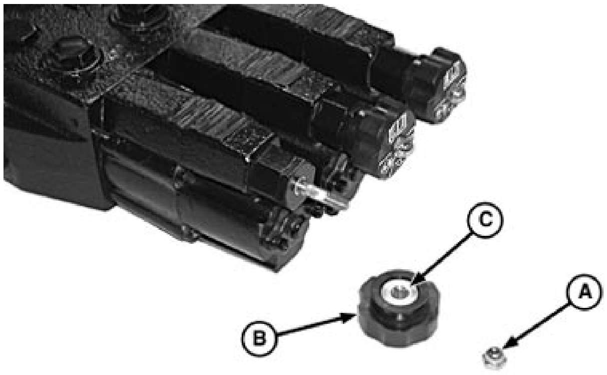
Detent Knob Nut—Torque.................................. 4—5 N•m (35—44 lb-in.)

30. Repeat repair procedure for other detent valves.

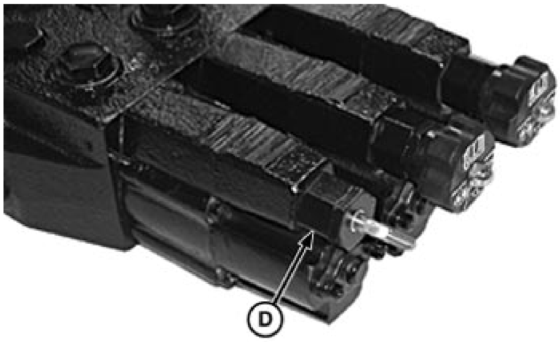
A—Nut
B—Knob
C—Collet
D—Detent Valve



LV11112 –UN–15OCT04



LV11113 –UN–15OCT04



LV11114 –UN–15OCT04

Continued on next page

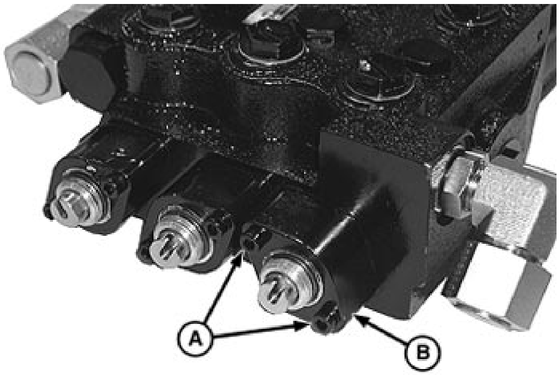
OUO1073,0001D96 –19–07OCT04–8/16

31. Remove socket head cap screws (A) and spool end cap (B).

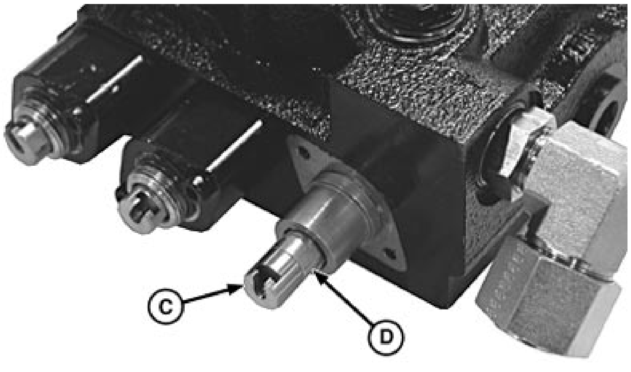
32. Remove clevis end adapter (C) from spool (D) using the wrench flats of each component.

33. Remove detent sleeve (E), steel balls (F and G), and spring (H).

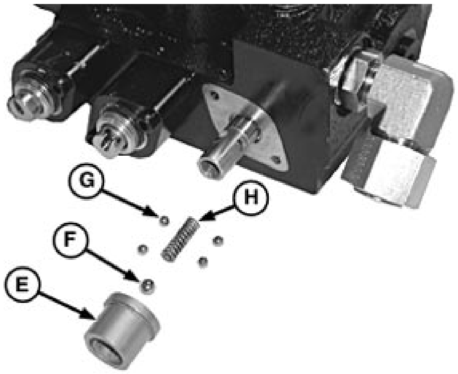
A—Socket Head Cap Screws
B—Spool End Cap
C—Clevis End Adapter
D—Spool
E—Detent Sleeve
F—Steel Ball
G—Steel Ball (4 used)
H—Spring



LV11115 –UN–15OCT04



LV11116 –UN–15OCT04



LV11117 –UN–15OCT04

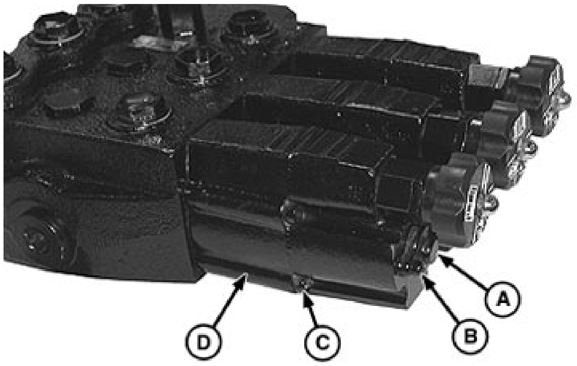
Continued on next page

OUO1073,0001D96 –19–07OCT04–9/16

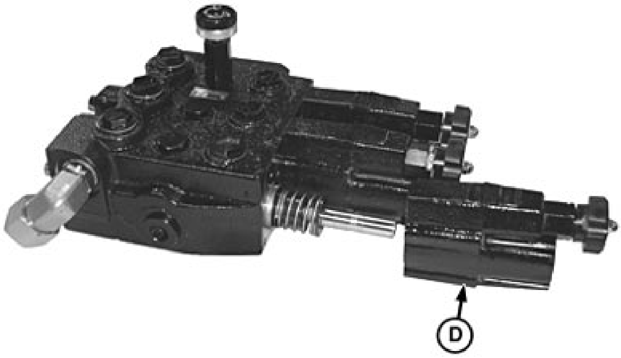
34. Remove screws (A) and cap (B).

35. Remove socket head cap screws (C) and valve housing end cap (D).

A—Screw (2 used)
B—Cap
C—Socket Head Cap Screw (4 used)
D—Valve Housing End Cap



LV11118 –UN–15OCT04



LV11120 –UN–15OCT04

Continued on next page

OUO1073,0001D96 –19–07OCT04–10/16

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation.

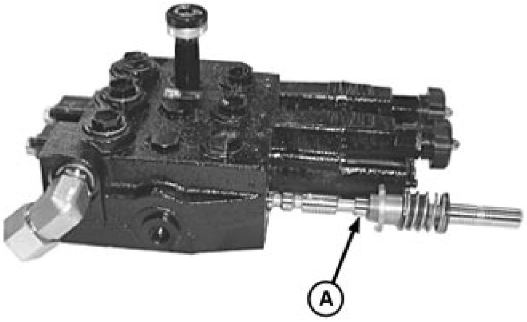
Detents are matched to spool type. Make sure detents are installed with the spools they are removed from.

36. Partially slide out spool assembly (A) to access O-ring (B).

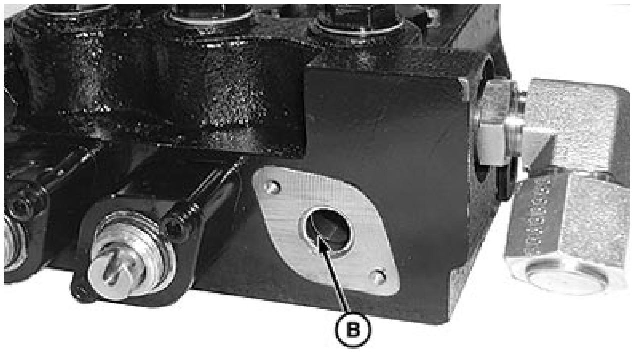
37. Remove O-ring.

38. Slide spool assembly up to O-ring groove to aid in O-ring installation. Install O-ring.

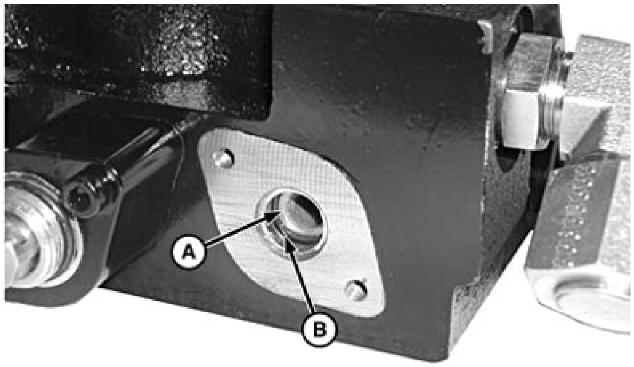
A—Spool Assembly
B—O-Ring



LV11121 –UN–15OCT04



LV11122 –UN–15OCT04



LV11123 –UN–15OCT04

Continued on next page

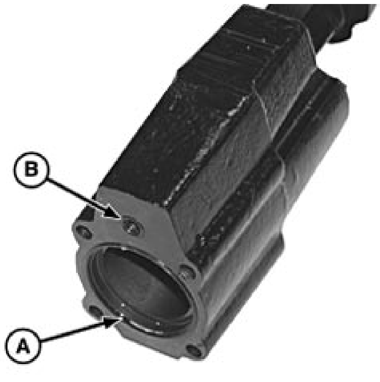
OUO1073,0001D96 –19–07OCT04–11/16

39. Replace O-rings (A and B).

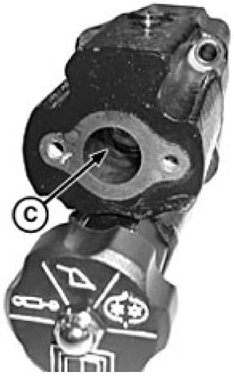
NOTE: Backup ring should be installed on the “top” side of valve housing, facing detent knob.

40. Replace O-ring and backup ring (C).

A—O-Ring
B—O-Ring
C—O-Ring and Backup Ring



LV11124 –UN–15OCT04



LV11125 –UN–15OCT04

OUO1073,0001D96 –19–07OCT04–12/16

41. Install spool assembly back into valve as shown.

42. Apply MT1247 Locking Liquid, supplied with repair kit, to threads of socket head cap screws (C).

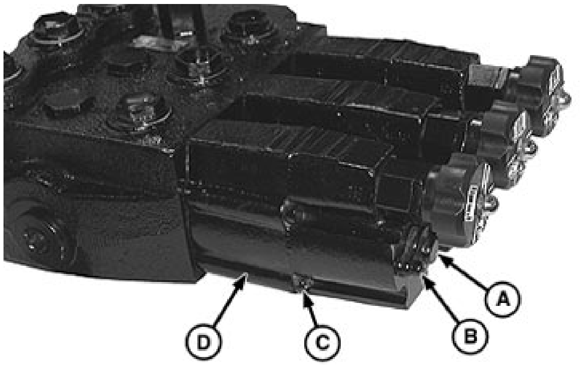
43. Install valve housing end cap (D) and socket head cap screws. Tighten to specification.

Specification

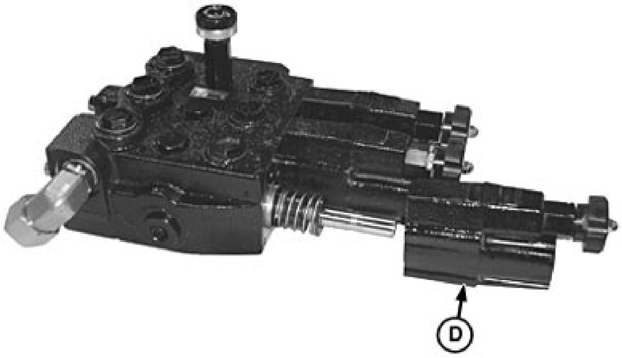
Valve Housing End Cap Socket
Head Cap Screws—Torque .... 12—15 N•m (106—133 lb-in.)

44. Install cap (B) and screws (A).

A—Screw (2 used)
B—Cap
C—Socket Head Cap Screw (4 used)
D—Valve Housing End Cap



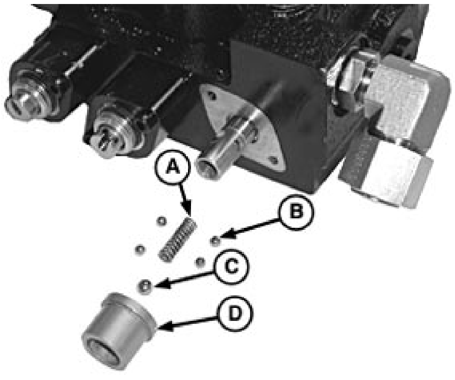
LV11118 –UN–15OCT04



LV11120 –UN–15OCT04

Continued on next page

OUO1073,0001D96 –19–07OCT04–13/16



45. Install spring (A) into spool bore.

46. Apply a liberal amount of grease to steel balls (B) and install into holes in spool.

47. Install large steel ball (C) into spool bore.

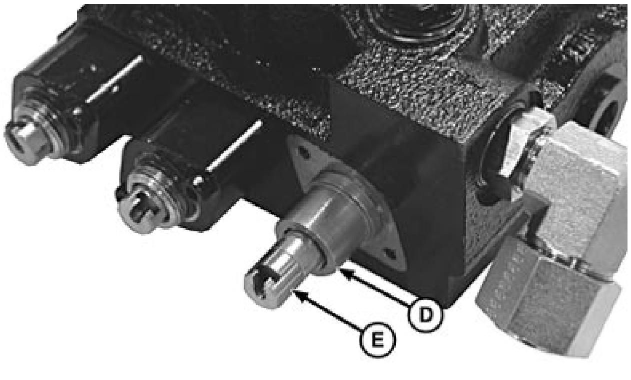
48. Place detent sleeve (D) over end of spool.

49. Using a small allen wrench, gently push in large ball until it is past centerline of small steel balls and press detent sleeve (D) past steel balls. Gently pull on detent sleeve to ensure correct installation.

50. Install clevis end adapter (E). Tighten to specification.

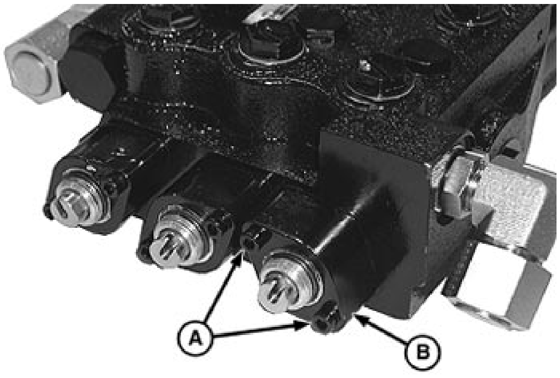
Specification

Clevis End Adapter—Torque............................ 26—30 N•m (19—22 lb-ft)



A—Spring
B—Steel Ball (4 used)
C—Steel Ball
D—Detent Sleeve
E—Clevis Adapter

OUO1073,0001D96 –19–07OCT04–14/16



51. Replace O-rings on spool end cap (B).

52. Apply MT1247 Locking Liquid, supplied with repair kit, to threads of socket head cap screws (A).

53. Install end cap and socket head cap screws. Tighten cap screws to specification.

Specification

Spool End Cap Socket Head Cap
Screws—Torque... 12—15 N•m (106—133 lb-in.)

A—Socket Head Cap Screws
B—End Cap

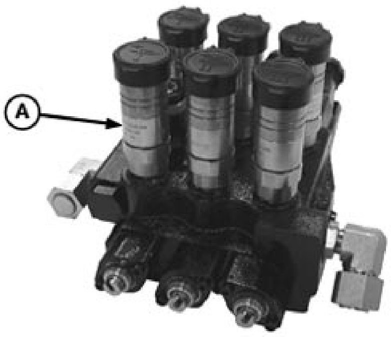
Continued on next page

OUO1073,0001D96 –19–07OCT04–15/16

54. Install SCV couplers (A). Tighten to specification.

Specification	
SCV Coupler—Torque	69 N•m (51 lb-ft)

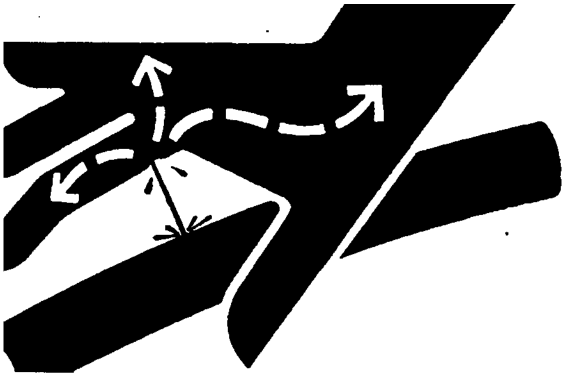
A—SCV Coupler (6 used)



LV11102 –UN–19OCT04

OUO1073,0001D96 –19–07OCT04–16/16

Inspect and Replace Hydraulic Lines Single, Dual, or Triple Selective Control Valve (SCV)



X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

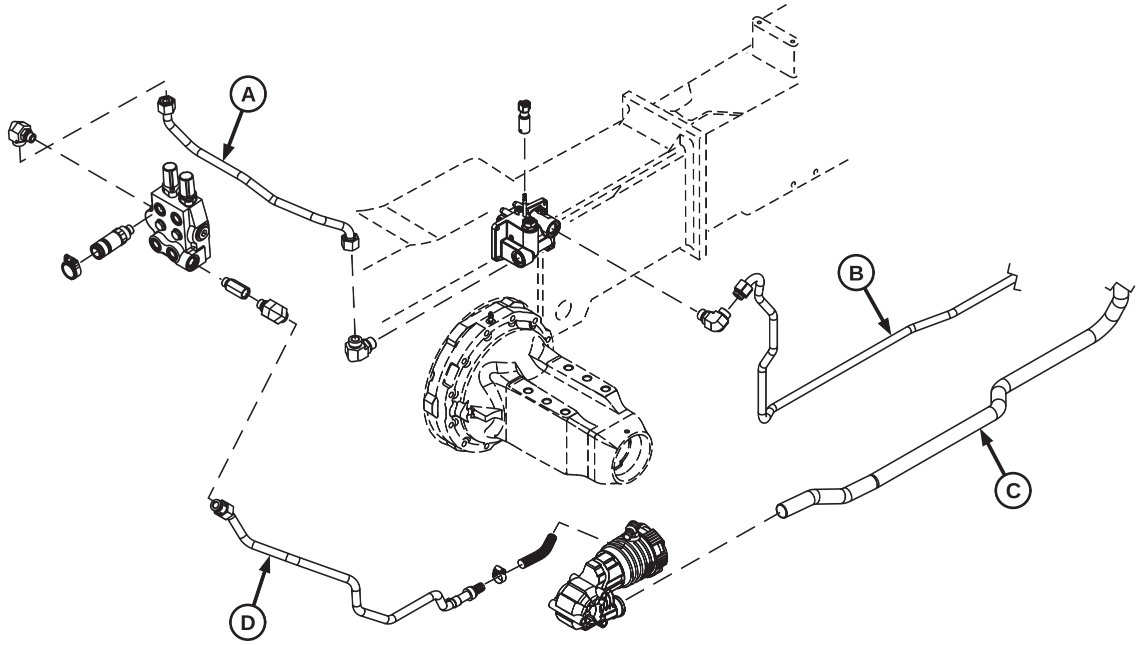
NOTE: SCV lines vary depending on what SCV configuration machine is equipped with. Depending on SCV configuration, some components may need to be removed in order to repair or remove SCV lines.

Mechanical rockshaft control valve is shown. Electro-hydraulic rockshaft is similar.

1. Operate SCV levers to relieve any pressure in the system.

Continued on next page

OUO6046,000A02F –19–01OCT04–1/2



LV10958 –UN–08OCT04

A—RCV-to-SCV Pressure Inlet Line
B—Hydraulic Pump-to-Mechanical RCV Line
C—Hydraulic Filter-to-Hydraulic Pump Line
D—Hydraulic Filter-to-SCV Return Line

2. Remove right rear wheel.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines is necessary, drain transmission/hydraulic oil.

3. Inspect hydraulic lines for wear or damage. Replace as necessary.

4. Install wheel. Tighten wheel cap screws to specification.

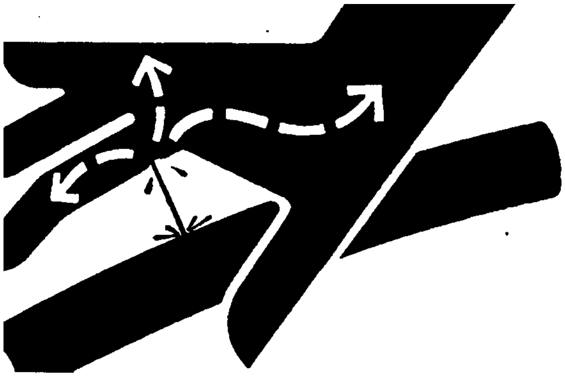
Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque .... 600 N•m (442 lb-ft)

5. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

OUO6046,000A02F –19–01OCT04–2/2

Inspect and Replace Hydraulic Lines Single, Dual, or Triple Selective Control Valve (SCV) With Mid-Mount Valve


X9811 –UN–23AUG88

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

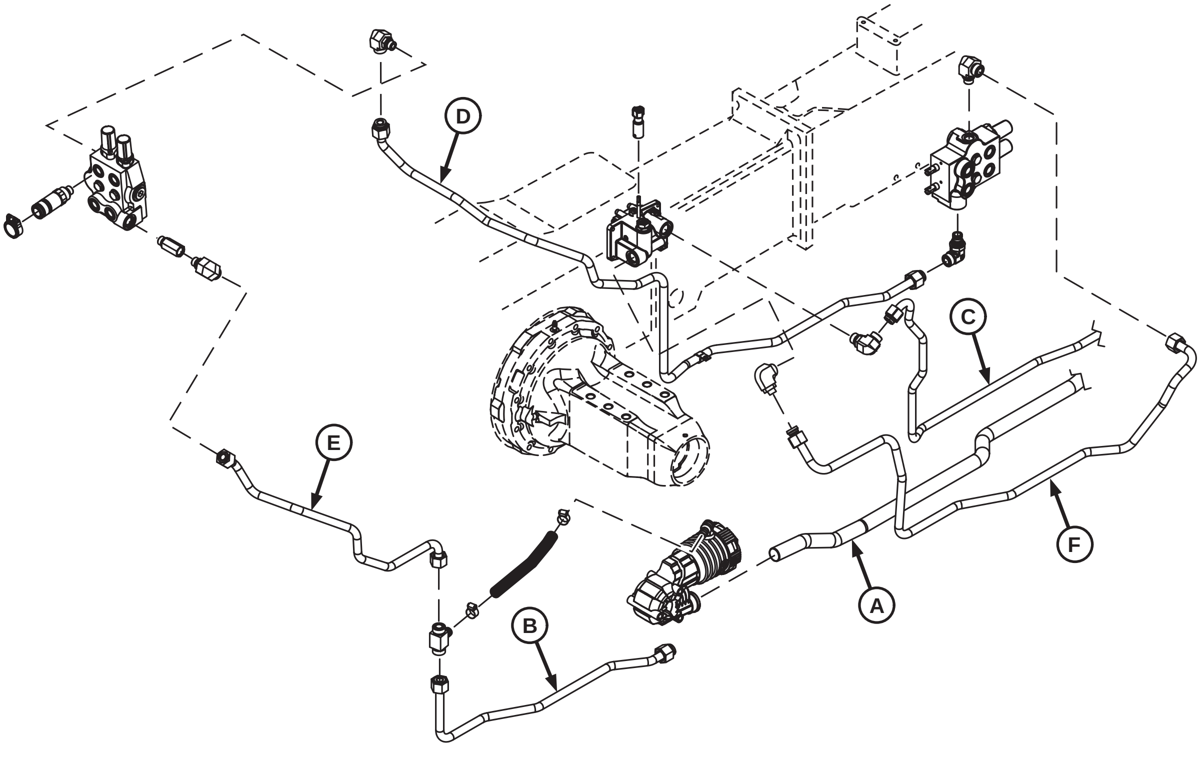
NOTE: SCV lines vary depending on what SCV configuration machine is equipped with. Depending on SCV configuration, some components may need to be removed in order to repair or remove SCV lines.

Mechanical rockshaft control valve is shown. Electro-hydraulic rockshaft is similar.

1. Operate SCV levers to relieve any pressure in the system.

Continued on next page

OUO6046,000A030 –19–01OCT04–1/2



A—Hydraulic Filter-to-Hydraulic Pump Line
B—Mid-Mount Return-to-Hydraulic Filter
C—Hydraulic Pump-to-Mechanical RCV
D—Mid-Mount Pressure-to-Rear SCV Inlet
E—Rear SCV Return-to-Hydraulic Filter
F—RCV-to-Mid-Mount Inlet

2. Remove right rear wheel.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines is necessary, drain transmission/hydraulic oil.

3. Inspect hydraulic lines for wear or damage. Replace as necessary.

4. Install wheel. Tighten wheel cap screws to specification.

Specification	
Rear Wheel-to-Axle Cap Screw	
M20—Torque	600 N•m (442 lb-ft)

5. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

OUO6046,000A030 –19–01OCT04–2/2

Hydraulic Mid-Mount Control Valve

Service Parts Kits

The following kits are available through your parts catalog:

Detent Kit

Load Check Valve Kit

Pressure Out Fitting Kit

Seal Kit

JG31785,000012D –19–29OCT04–1/1

Other Material

Number	**Name**	**Use**
MT1247 (U.S.)	Locking Liquid	Used on threads of SCV socket head cap screws.

JG31785,000012E –19–29OCT04–1/1

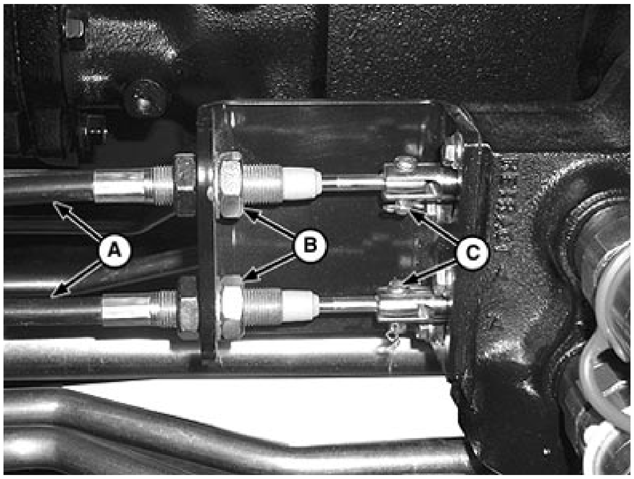
70
20
1

Specifications

Item	Measurement	Specification
Mid-Mount Control Valve Cap Screws	Torque	55 N•m (41 lb-ft.)
Mid-Mount Control Valve Line Nut	Torque	69 N•m (50 lb-ft)
Cable Bracket Cap Screw	Torque	15 N•m (11 lb-ft)
Plug	Torque	26—30 N•m (19—22 lb-ft)
Spool Cap Socket Head Cap Screw	Torque	12—15 N•m (106—133 lb-in.)
Load Check Cap	Torque	34—41 N•m (25—30 lb-ft)
Load Check Flow Control Valve	Torque	34—41 N•m (25—30 lb-ft)
Compensator Valve	Torque	20—27 N•m (15—20 lb-ft)
Housing Plug	Torque	20—27 N•m (15 lb-ft)
Adapter Plate Socket Head Cap Screws	Torque	12—15 N•m (106—133 lb-in.)
Solenoid Valve Stem	Torque	20—27 N•m (15—20 lb-ft)
Coil Nut	Torque	3—4 N•m (27—35 lb-in.)
SCV Coupler	Torque	69 N•m (51 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

OUO1082,0000334 –19–12NOV04–1/1

Inspect and Repair Joystick and Linkage



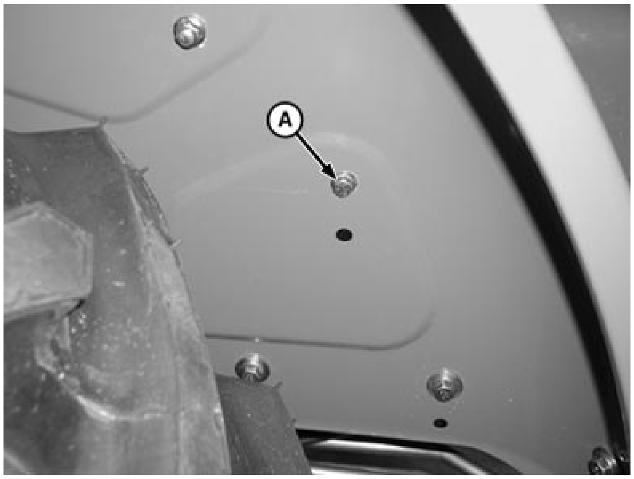
1. Remove pins (C).
2. Remove jam nuts (B) and control cables (A).

A—Control Cable (2 used)
B—Jam Nut (2 used)
C—Pin (2 used)

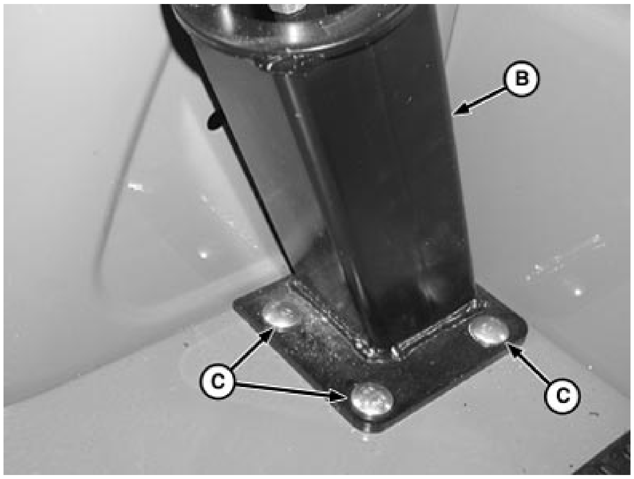
JG31785,0000131 –19–29OCT04–1/8

3. Straddle mount tractors: Remove cap screw and nut (A).
4. Straddle mount tractors: Remove carriage bolts and nuts (C) and joystick assembly (B).

A—Cap Screw and Nut
B—Joystick Assembly
C—Carriage Bolt and Nut (3 used)



Mid-Mount Joystick Assembly Fastener (Straddle Mount Tractors)



Remove Mid-Mount Joystick Assembly (Straddle Mount Tractors)

Continued on next page

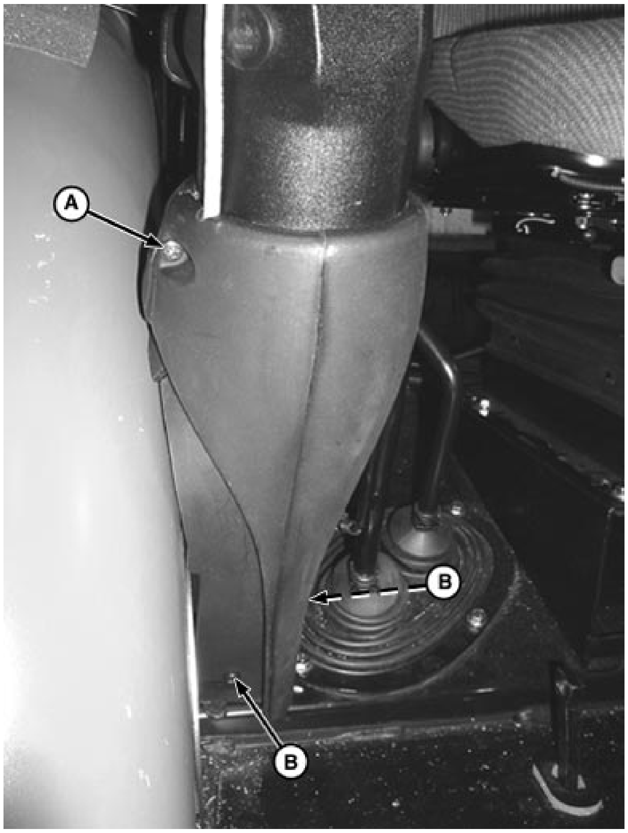
JG31785,0000131 –19–29OCT04–2/8

5. Cab tractors: Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)

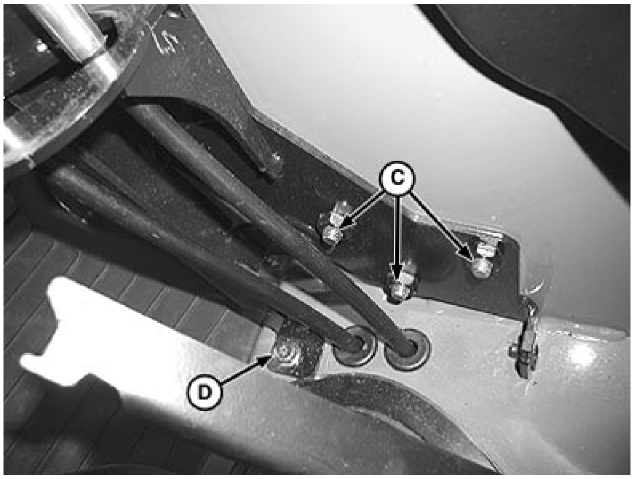
6. Isolated open operator station and cab tractors: Remove screw and nut (A) and screws (B). Remove cover.

7. Isolated open operator station and cab tractors: Remove cap screws (C and D). Route control cables through floor and remove joystick assembly.

A—Screw and Nut
B—Screw (2 used)
C—Cap Screw (3 used)
D—Cap Screw

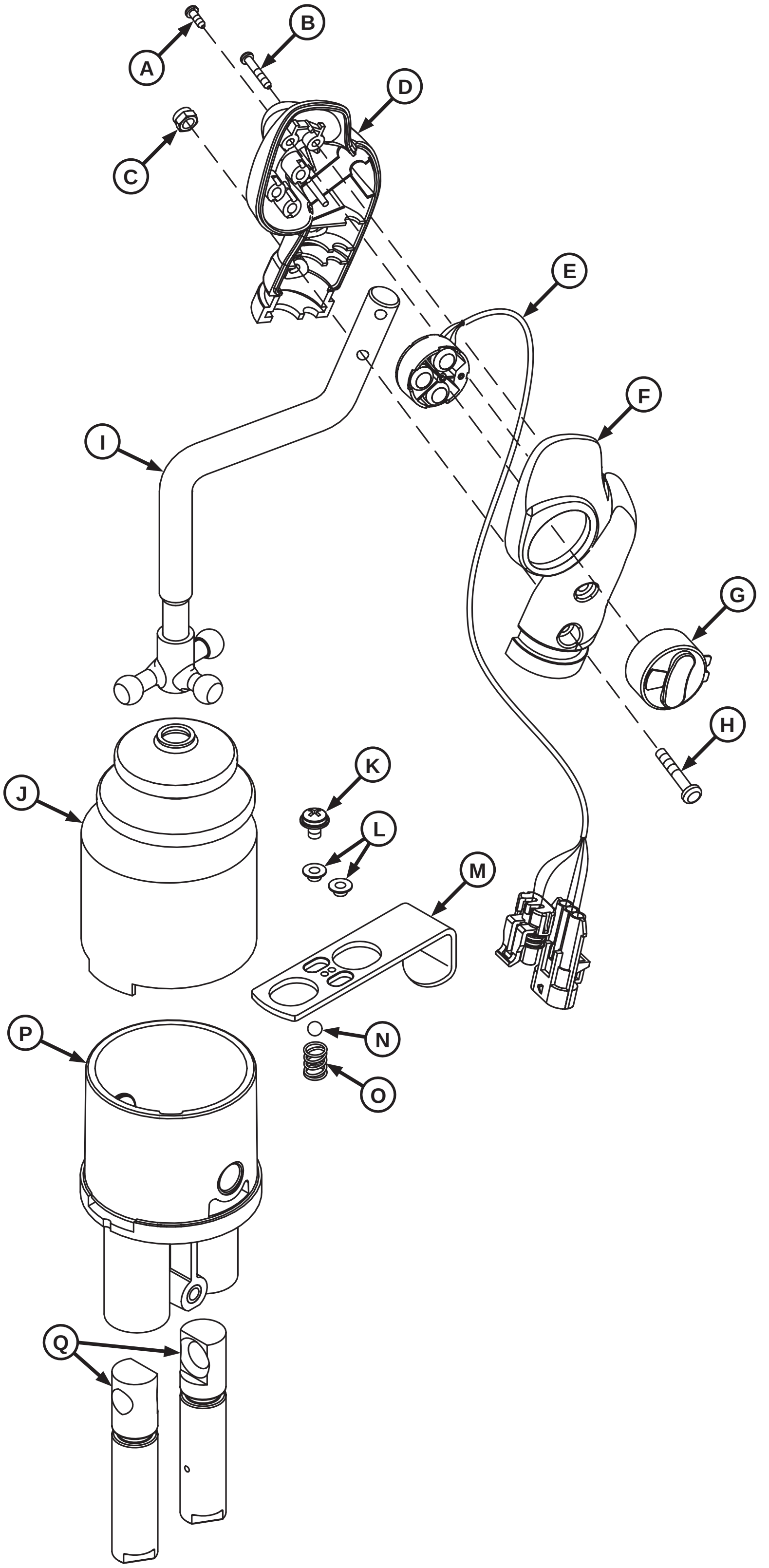


Remove Mid-Mount Joystick Cover (IOOS and Cab Tractors)



Remove SCV Joystick Assembly (IOOS and Cab Tractors)

Continued on next page JG31785,0000131 –19–29OCT04–3/8



LV11442 –UN–05NOV04

Continued on next page

A—Cap Screw
B—Cap Screw
C—Nut
D—Grip
E—Wire Harness (Triple Mid-Mount Only)
F—Grip
G—Switch (Triple Mid-Mount Only)
H—Cap Screw
I—Control Lever
J—Boot
K—Screw
L—Bushing (2 used)
M—Lever
N—Ball
O—Spring
P—Housing
Q—Piston (2 used)

8. Disassemble parts (A—Q).

9. Inspect all parts for wear or damage. Replace as necessary.

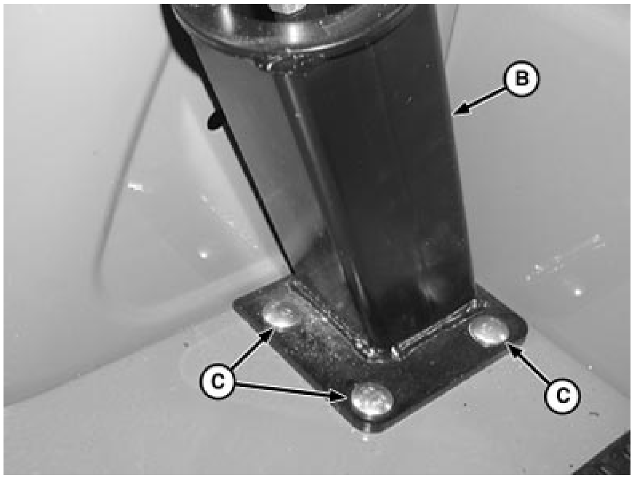
10. Assemble parts (A—Q).

JG31785,0000131 –19–29OCT04–5/8

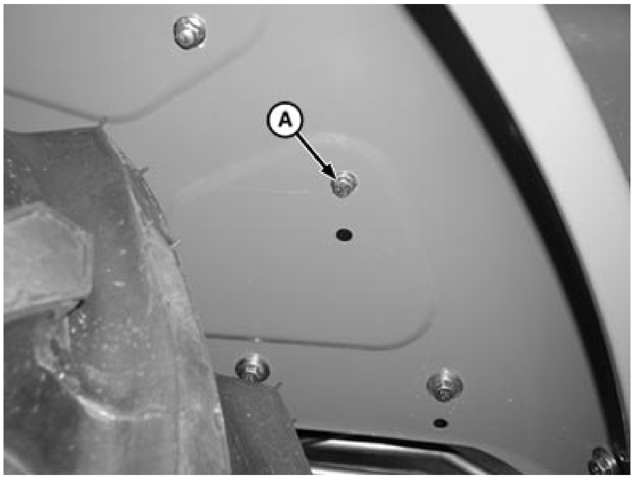
11. Straddle mount tractors: Install joystick assembly (B) and carriage bolts and nuts (C).

12. Straddle mount tractors: Install cap screw and nut (A).

A—Cap Screw and Nut
B—Joystick Assembly
C—Carriage Bolt and Nut (3 used)



Install Joystick Assembly Fasteners (Straddle Mount)



Install Joystick Assembly (Straddle Mount)

Continued on next page

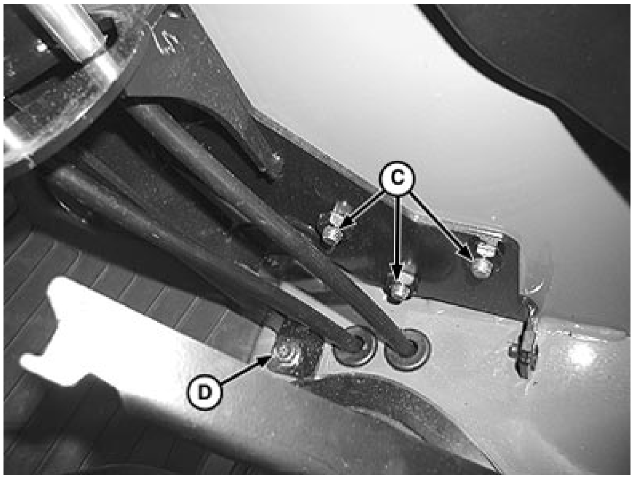
JG31785,0000131 –19–29OCT04–6/8

13. Isolated open operator station and cab tractors: Route control cables through floor; install joystick assembly and cap screws (C and D).

14. Isolated open operator station and cab tractors: Install cover, screws (B), and screw and nut (A).

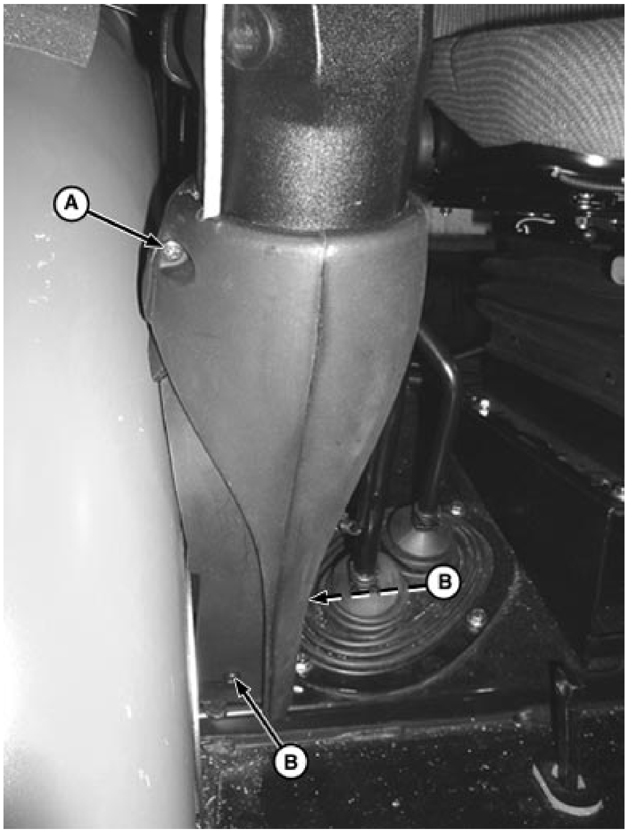
15. Cab tractors: Install right-side control console. (See Remove and Install Right-Side Control Console—Cab Tractors in Section 90, Group 06.)

A—Screw and Nut
B—Screw (2 used)
C—Cap Screw (3 used)
D—Cap Screw



LV11450 –UN–01NOV04

Install Joystick Assembly (IOOS and Cab Tractors)



LV11449 –UN–01NOV04

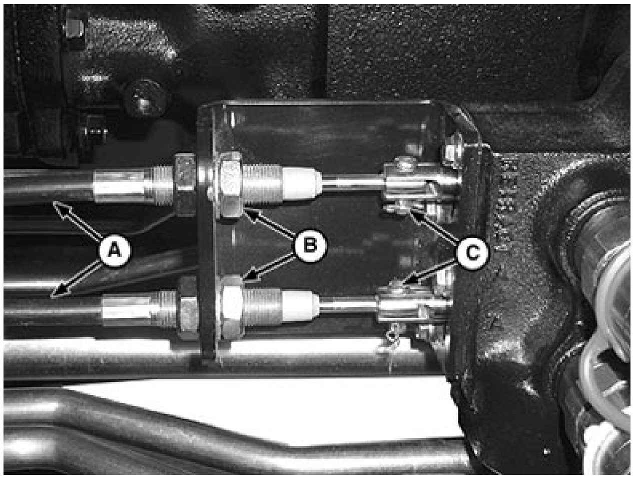
Install Joystick Cover (IOOS and Cab Tractors)

Continued on next page

JG31785,0000131 –19–29OCT04–7/8

16. Install cables (A), jam nuts (B), and pins (C).

17. Adjust Mid-Mount control cables. (See Reference 270-15-013, Mid-Mount Control Valve Cable Adjustment in TM2197, Section 270, Group 15.)



LV11446 –UN–01NOV04

A—Control Cable (2 used)
B—Jam Nut (2 used)
C—Pin (2 used)

JG31785,0000131 –19–29OCT04–8/8

Remove and Install Mid-Mount Control Valve

1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Move Mid-Mount joystick through all positions or lower EH Hitch (if equipped) to relieve pressure.

Continued on next page

JG31785,0000132 –19–29OCT04–1/4

3. Remove cap screws (A), pins (C), and bracket (B).

NOTE: Close all openings using caps and plugs.

Tag or label hydraulic lines before disconnecting to aid during installation.

4. Disconnect hydraulic lines at Mid-Mount valve.

NOTE: Tag or label wire connectors before disconnecting to aid during installation.

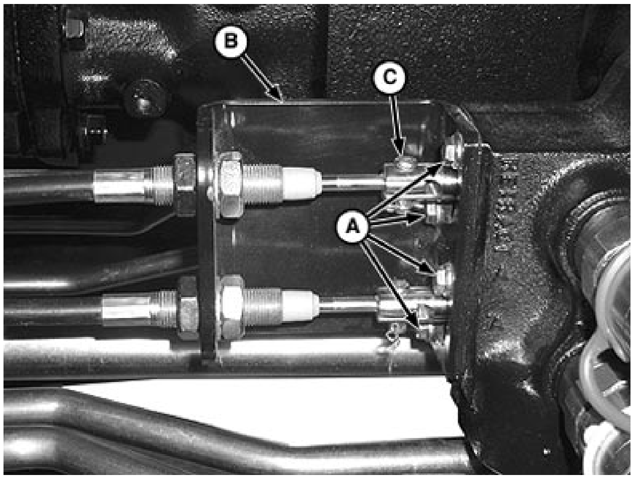
5. Disconnect wire connectors for triple Mid-Mount control valve, if equipped.

NOTE: Triple Mid-Mount control valve shown; dual Mid-Mount control valve is similar.

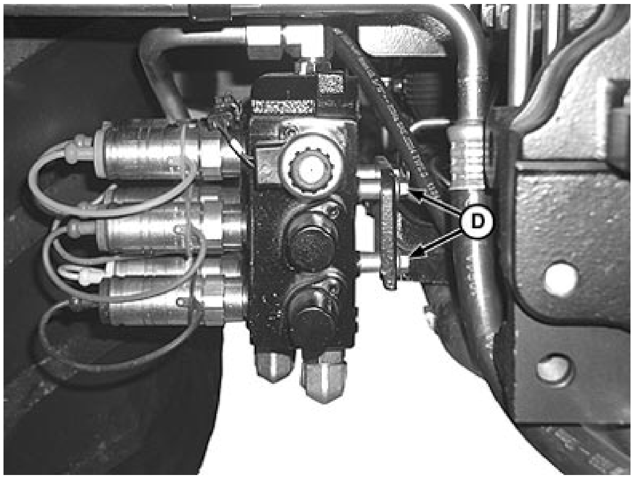
6. Remove cap screws (D) and control valve.

7. Inspect Mid-Mount control valve for worn or damaged parts. Replace parts as necessary. (See Disassemble, Inspect, and Assemble Dual Mid-Mount Control Valve or Disassemble, Inspect, and Assemble Triple Mid-Mount Control Valve in Section 70, Group 20.)

A—Cap Screw (4 used)
B—Bracket
C—Pin (2 used)
D—Cap Screw (3 used)



LV11452 –UN–01NOV04



LV11451 –UN–01NOV04

Continued on next page

JG31785,0000132 –19–29OCT04–2/4

8. Install Mid-Mount control valve and cap screws (D). Tighten cap screws to specification.

Specification

Mid-Mount Control Valve Cap Screws—Torque .... 55 N•m (41 lb-ft.)

9. Connect hydraulic lines at Mid-Mount valve. Tighten line nuts to specification.

Specification

Mid-Mount Control Valve Line Nut—Torque .... 69 N•m (50 lb-ft)

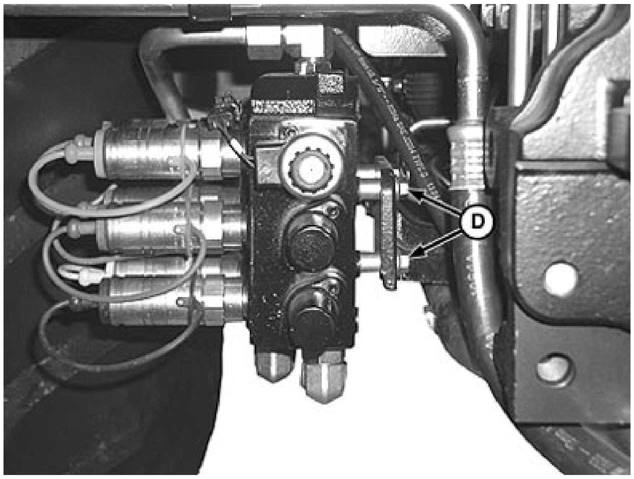
10. Connect wire connectors, if equipped.

11. Install bracket (B), cap screws (A), and pins (C). Tighten cap screws to specification.

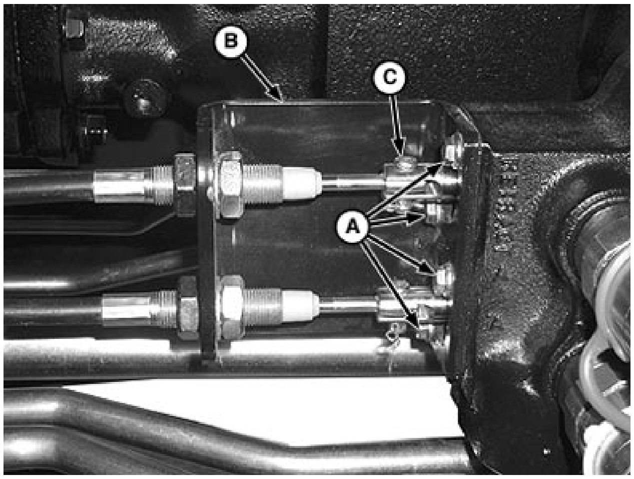
Specification

Cable Bracket Cap Screw—Torque .... 15 N•m (11 lb-ft)

A—Cap Screw (4 used)
B—Bracket
C—Pin (2 used)
D—Cap Screw (3 used)



LV11451 –UN–01NOV04



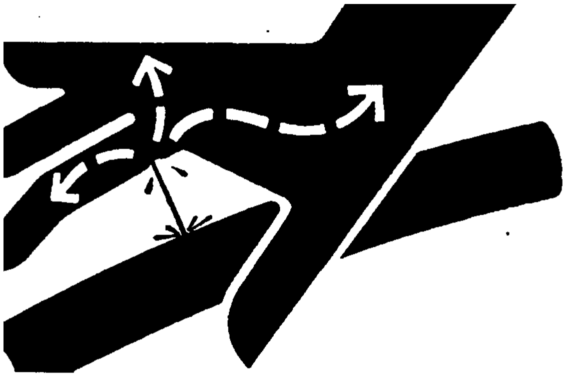
LV11452 –UN–01NOV04

Continued on next page

JG31785,0000132 –19–29OCT04–3/4

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

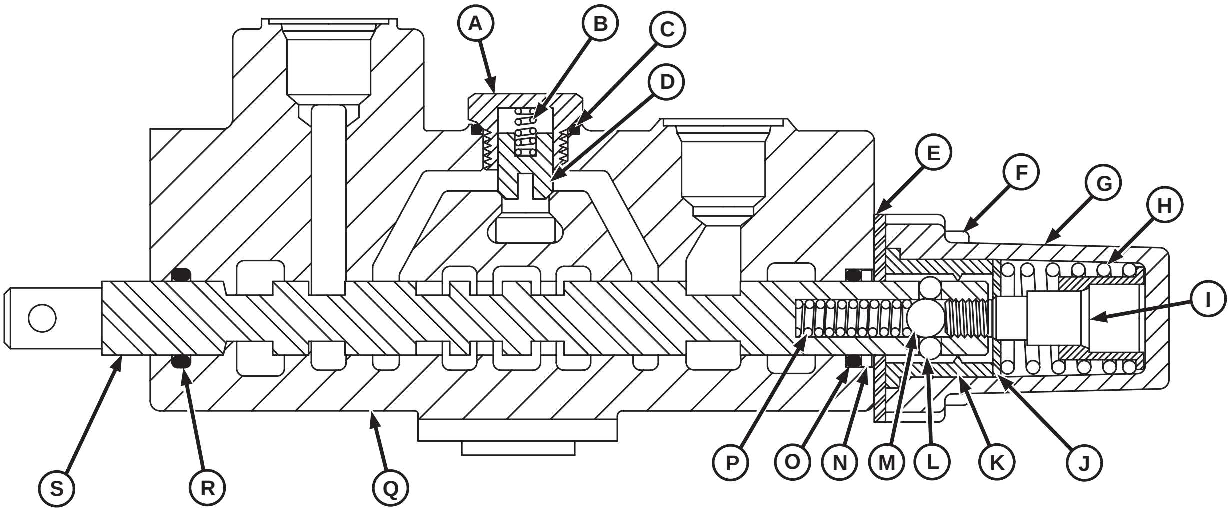


X9811 –UN–23AUG88

12. Start engine and operate joystick lever. Check all connections for leaks.

JG31785,0000132 –19–29OCT04–4/4

Disassemble, Inspect, and Assemble Dual Mid-Mount Control Valve



LV7029 –UN–23MAY01

A—Cap
B—Spring
C—O-Ring
D—Load Check
E—Seal Plate
F—Socket Head Cap Screw (2 used)
G—Cap
H—Spring
I—Socket Head Cap Screw
J—Washer
K—Detent
L—Detent Ball (4 used)
M—Pilot Ball
N—Backup Ring
O—O-Ring
P—Detent Spring
Q—Housing
R—O-Ring
S—Spool

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation.

Detents are matched to spool type. Make sure detents are installed with the spools they are removed from.

NOTE: Parts (A—D) and (E—P) are serviced as separate assemblies and are replaced as kits only.

1. Remove couplers from control valves as required.
2. Remove parts (A—D).
3. Remove socket head cap screws (F) and cap (G).

Continued on next page

NOTE: Seal plate (E) may come off with spool assembly.

4. Remove spool (S) and parts (H—P) as an assembly from housing (Q).

5. Remove seal plate (E).

6. Remove backup ring (N) and O-rings (O and R).

7. Place a screwdriver through cable pin hole of spool.

8. Clamp screwdriver in a soft-jawed vise.

9. Remove parts (H—M) and (P).

10. Inspect all parts for wear or damage. Replace as necessary.

11. Lightly coat detent spring (P), pilot ball (M) and detent balls (L) with multipurpose grease.

12. Install detent spring (P), pilot ball (M) and detent balls (L) into spool.

Continued on next page

JG31785,0000133 –19–29OCT04–2/6

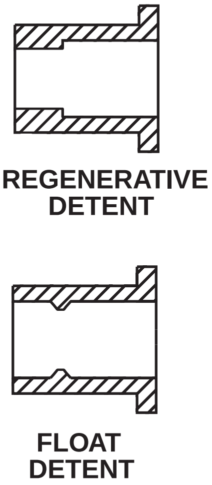
NOTE: Notched detent is used on 6-groove float spool. Stepped detent is used on 5-groove regenerative spool.

13. Place detent on spool.

14. Using a small allen wrench (A) gently push in pilot ball and detent spring.

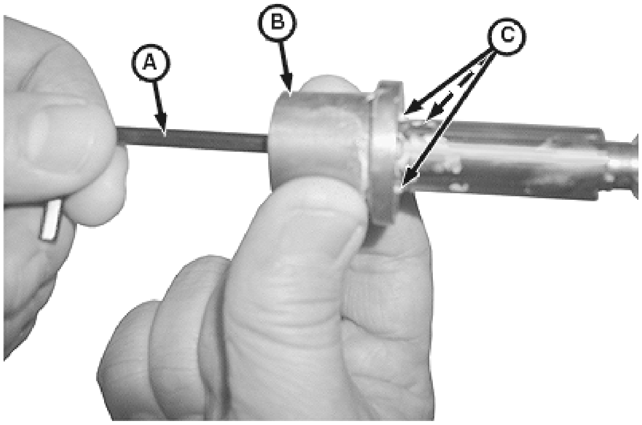
15. Carefully slide detent (B) over detent balls (C).

A—Allen Wrench
B—Detent
C—Detent Balls



LV7038

LV7038 –19–29MAY01

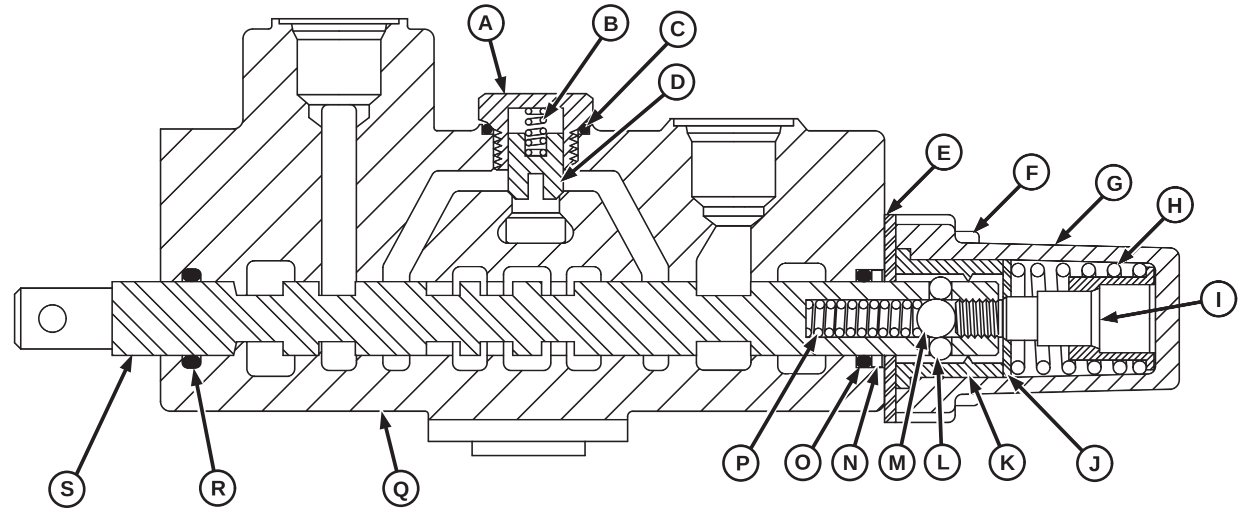


LV7039 –UN–29MAY01

70
20
15

Continued on next page

JG31785,0000133 –19–29OCT04–3/6



LV7029 –UN–23MAY01

A—Cap
B—Spring
C—O-Ring
D—Load Check
E—Seal Plate
F—Socket Head Screw (2 used)
G—Cap
H—Spring
I—Socket Head Cap Screw
J—Washer
K—Detent
L—Detent Ball (4 used)
M—Pilot Ball
N—Backup Ring
O—O-Ring
P—Detent Spring
Q—Housing
R—O-Ring
S—Spool

16. Install parts (H—J). Tighten socket head cap screw (I) to specification.

Specification

Plug—Torque.. 26—30 N•m (19—22 lb-ft)

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

17. Install new O-rings (R and O) and backup ring (N).
18. Install seal plate (E).
19. Coat spool and bore with clean transmission/hydraulic oil.
20. Install spool.
21. Lightly coat detent assembly with multipurpose grease.

Continued on next page

JG31785,0000133 –19–29OCT04–4/6

22. Apply MT1247 Locking Liquid, supplied with repair kit, to threads of socket head cap screws (F).

23. Install cap (G) using socket head cap screws (F). Tighten screws to specification.

Specification

Spool Cap Socket Head Cap Screw—Torque .... 12—15 N•m (106—133 lb-in.)

24. Install parts (A—D). Tighten cap (A) to specification.

Specification

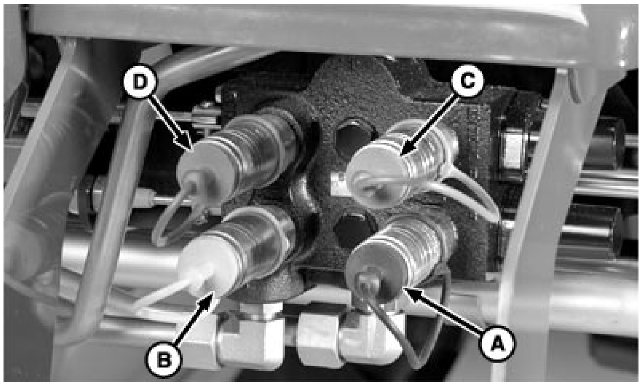
Load Check Cap—Torque .... 34—41 N•m (25—30 lb-ft)

JG31785,0000133 –19–29OCT04–5/6

25. Install Mid-Mount couplers and tighten to specification. Install dust plugs on couplers in the order shown.

Specification

Mid-Mount Coupler—Torque .... 69 N•m (51 lb-ft)



LV9676 –UN–16AUG04

A—Bucket Cylinder—Rod End (Black)
B—Bucket Cylinder—Head End (Yellow)
C—Boom Cylinder—Head End (Blue)
D—Boom Cylinder—Rod End (Red)

JG31785,0000133 –19–29OCT04–6/6

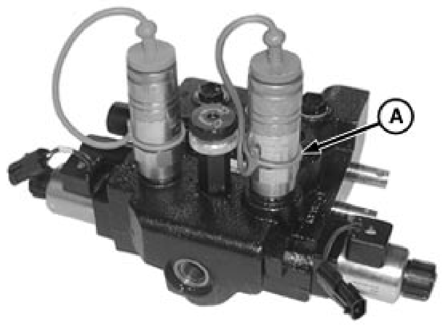
Disassemble, Inspect, and Assemble Triple Mid-Mount Control Valve

IMPORTANT: Clean dirt and debris from valve before disassembly to prevent contamination.

Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

Remove couplers (A) as required.



LV11220 –UN–19OCT04

A—Coupler (6 used)

Continued on next page

JG31785,0000134 –19–29OCT04–1/15

Mid-Mount I Repair

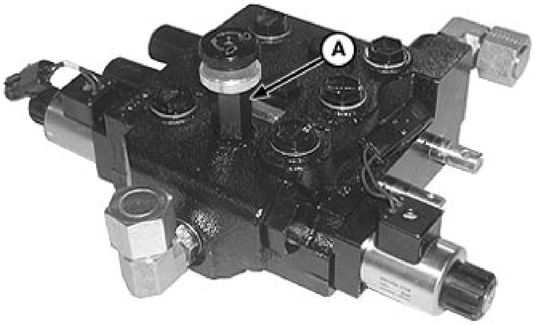
NOTE: O-ring (B) may be replaced individually. Valve internal O-rings and components are available as a repair kit.

1. Remove load check flow control valve assembly (A). If installing flow control valve repair kit proceed to step 5.
2. If not installing repair kit, install new O-ring (B).
3. Ensure spring (J) and poppet (K) are in place. Lubricate O-ring and install load check flow control valve. Tighten to specification.

Specification	
Load Check Flow Control Valve—Torque	34—41 N•m (25—30 lb-ft)

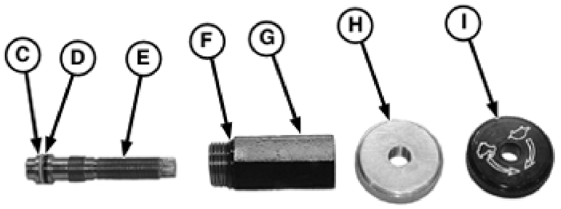
4. Install backup ring (C) and O-ring (D) onto stem (E).
5. Install spacer, not shown, over end of stem with internal hex. Spacer sits on shoulder above O-ring.
6. Install stem into plug (G).
7. Install lock nut (H) on stem.
8. Install knob (I) onto knurled end of stem using a soft mallet.
9. Install poppet (K) and spring (J).
10. Install new O-ring (F) on plug.
11. Lubricate O-ring and install load check flow control assembly. Tighten to specification.

A—Load Check Flow Control Valve Assembly
B—O-Ring
C—Backup Ring
D—O-Ring
E—Stem
F—O-Ring
G—Plug
H—Lock Nut
I—Knob
J—Spring
K—Poppet



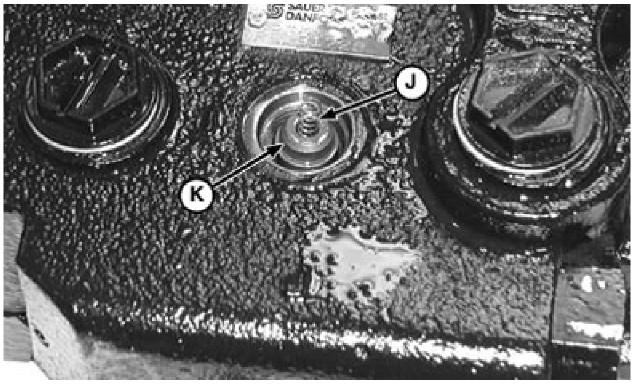
LV11227 –UN–19OCT04

LV11108 –UN–19OCT04



LV11109 –UN–19OCT04

Load Check Flow Control Valve Repair Kit



LV11134 –UN–15OCT04

Continued on next page

Specification

Load Check Flow Control Valve—Torque	34—41 N•m (25—30 lb-ft)

NOTE: Individual seals on compensator valve are non-replaceable. If seal replacement is required, replace compensator valve assembly.

12. Remove compensator valve (A).

13. Lubricate O-ring and seals with clean oil and install compensator valve. Tighten to specification.

Specification

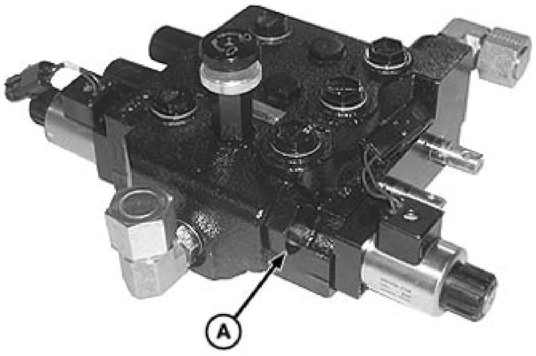
Compensator Valve—Torque	20—27 N•m (15—20 lb-ft)

14. Remove internal hex-head plug from rear of valve block and install new O-ring.

15. Lubricate O-ring and install plug. Tighten to specification.

Specification

Housing Plug—Torque	20—27 N•m (15 lb-ft)



LV11228 –UN–19OCT04

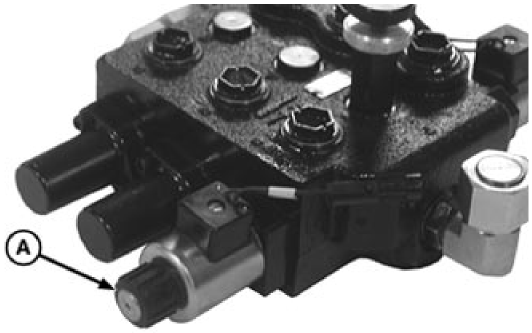
A—Compensator Valve

Continued on next page

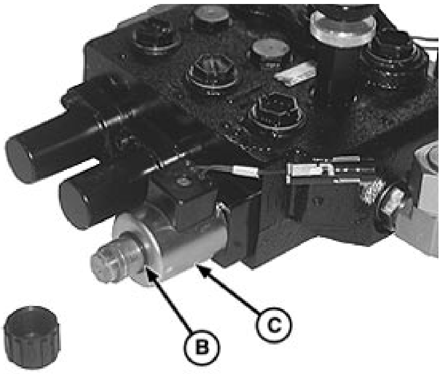
16. Remove coil nut (A).

17. Remove O-ring (B) and coil (C).

A—Nut
B—O-Ring
C—Coil



LV11221 –UN–19OCT04



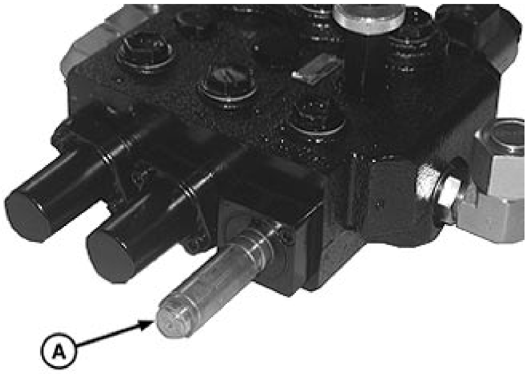
LV11222 –UN–19OCT04

JG31785,0000134 –19–29OCT04–5/15

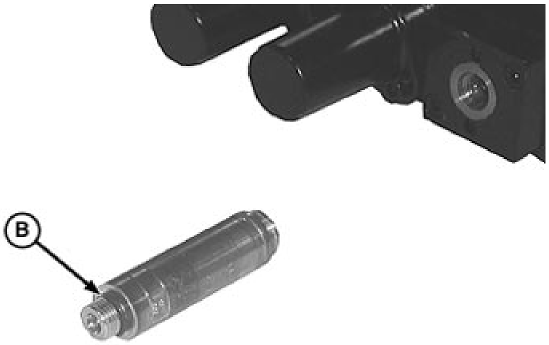
18. Using a 3/4 in. wrench on flats of valve, remove solenoid valve stem (A).

19. Remove O-ring (B) from solenoid valve stem.

A—Solenoid Valve Stem
B—O-Ring



LV11223 –UN–19OCT04



LV11224 –UN–19OCT04

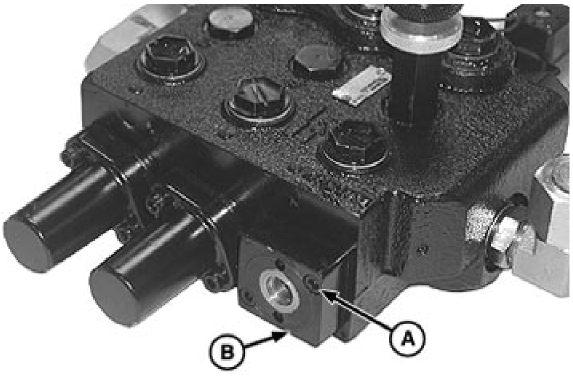
Continued on next page

JG31785,0000134 –19–29OCT04–6/15

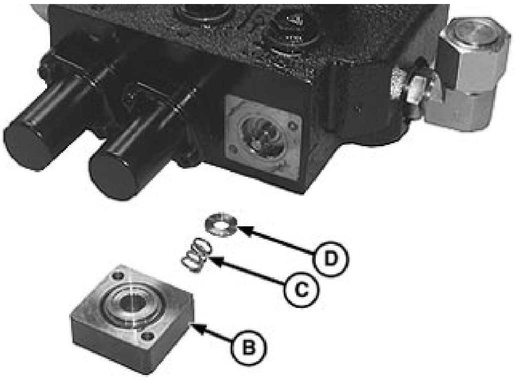
20. Remove socket head cap screws (A) and adapter plate (B).
21. Remove spool. Inspect spool and bore for damage.
22. Remove spring (C) and washer (D).
23. Remove valve spool from control valve. Inspect spool and bore for wear or damage.
24. Install washer and spring onto spool. Install spool in control valve.
25. Install new O-ring onto adapter plate.
26. Apply MT1247 Locking Liquid, supplied with repair kit, to threads of socket head cap screws. Install adapter and cap screws. Tighten to specification.

Specification	
Adapter Plate Socket Head Cap Screws—Torque	12—15 N•m (106—133 lb-in.)

A—Socket Head Cap Screws (2 used)
B—Adapter Plate
C—Spring
D—Washer



LV11225 –UN–19OCT04



LV11226 –UN–19OCT04

Continued on next page

JG31785,0000134 –19–29OCT04–7/15

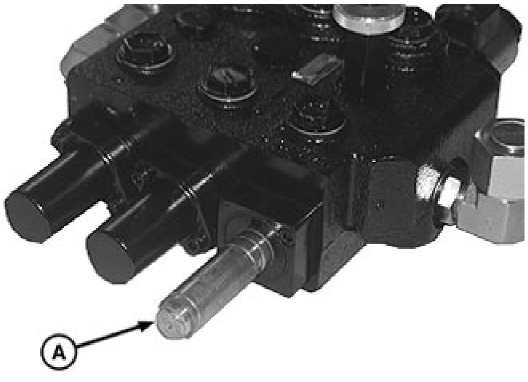
27. Install new O-ring (B) onto solenoid valve stem (A).

28. Lubricate O-ring and install solenoid valve stem. Tighten to specification.

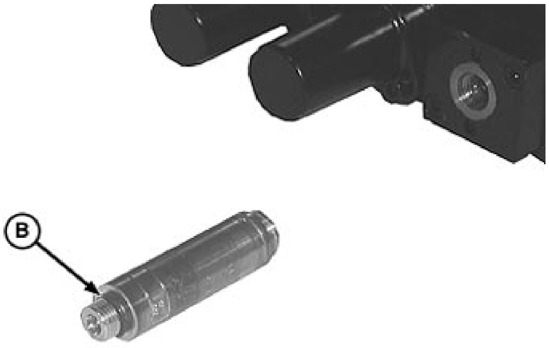
Specification

Solenoid Valve Stem—Torque........................ 20—27 N•m (15—20 lb-ft)

A—Solenoid Valve Stem
B—O-Ring



LV11223 –UN–19OCT04



LV11224 –UN–19OCT04

JG31785,0000134 –19–29OCT04–8/15

29. Install coil (C) and new O-ring (B).

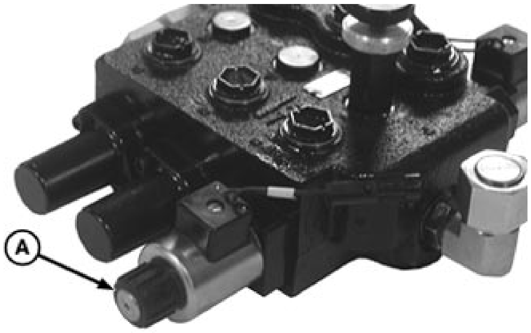
30. Install coil nut (A). Tighten to specification.

Specification

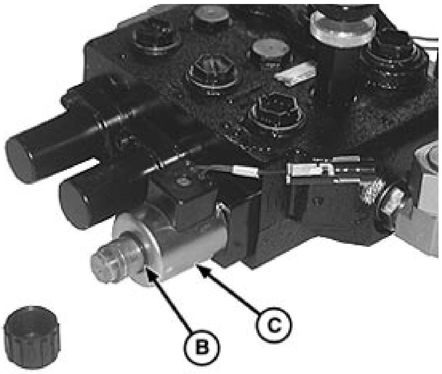
Coil Nut—Torque.. 3—4 N•m (27—35 lb-in.)

31. Repeat steps 17—29 for other solenoid coil.

A—Nut
B—O-Ring
C—Coil



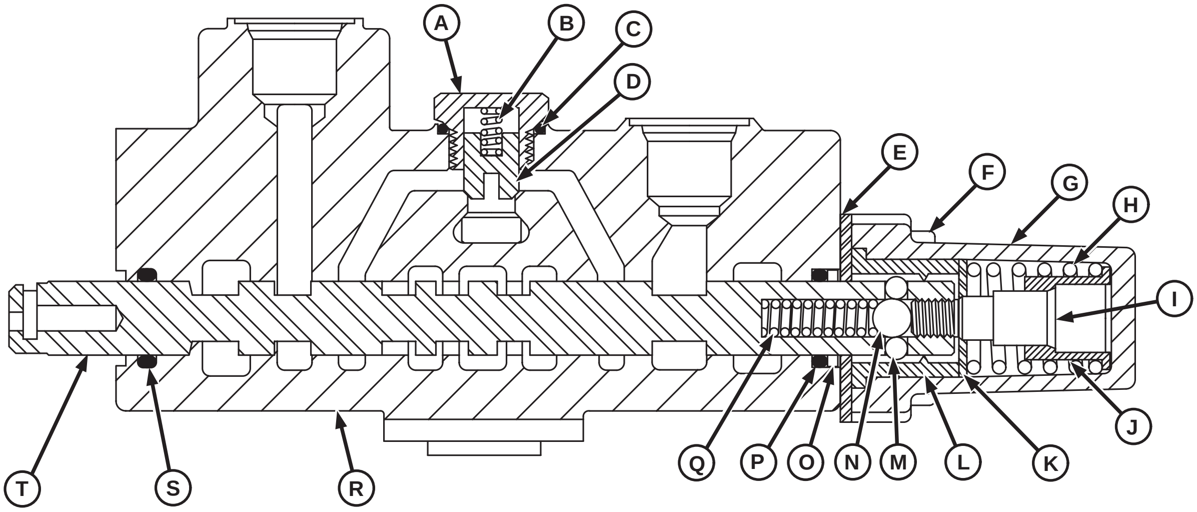
LV11221 –UN–19OCT04



LV11222 –UN–19OCT04

Continued on next page

JG31785,0000134 –19–29OCT04–9/15



LV11692 –UN–15NOV04

A—Cap	**G—Cap**	**L—Detent**	**Q—Detent Spring**
B—Spring	**H—Spring**	**M—Detent Ball (4 used)**	**R—Housing**
C—O-Ring	**I—Socket Head Cap Screw**	**N—Pilot Ball**	**S—O-Ring**
D—Load Check	**J—Spacer**	**O—Backup Ring**	**T—Spool**
E—Seal Plate	**K—Washer**	**P—O-Ring**	
F—Socket Head Cap Screw (2 used)			

Mid-Mount II and III Repair

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation.

Spacers are matched to spool type. Spacers must be installed with the spools they are removed from.

NOTE: Parts (A—D) and (E—P) are serviced as separate assemblies and are replaced as kits only.

1. Remove parts (A—D).

2. Remove socket head cap screws (F) and cap (G).

Continued on next page

NOTE: Seal plate (E) may come off with spool assembly.

3. Remove spool (T) and parts (H—Q) as an assembly from housing (R).

4. Remove seal plate (E).

5. Remove backup ring (O) and O-rings (P and S).

6. Place a screwdriver through cable pin hole of spool.

7. Clamp screwdriver in a soft-jawed vise.

NOTE: Spacer (J) must be assembled with the spool it is removed from. Spool number 2 uses a short spacer; spool number 3 uses a long spacer.

Mark or tag spacer for ease of assembly.

8. Remove parts (H—N) and (Q).

9. Inspect all parts for wear or damage. Replace as necessary.

10. Lightly coat detent spring (Q), pilot ball (N) and detent balls (M) with multipurpose grease.

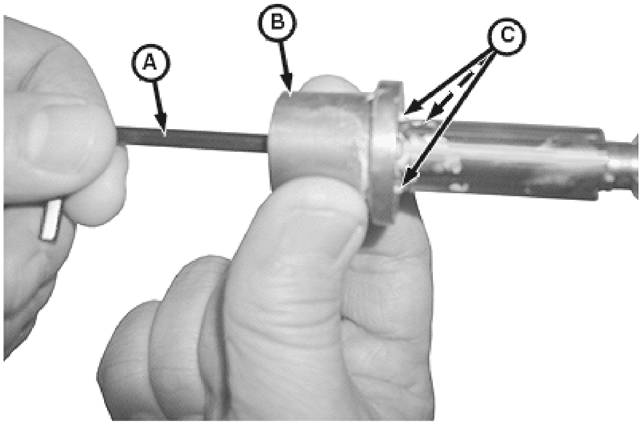
11. Install detent spring (Q), pilot ball (N) and detent balls (M) into spool.

JG31785,0000134 –19–29OCT04–11/15

12. Place detent on spool.

13. Using a small allen wrench (A) gently push in pilot ball and detent spring.

14. Carefully slide detent (B) over detent balls (C).

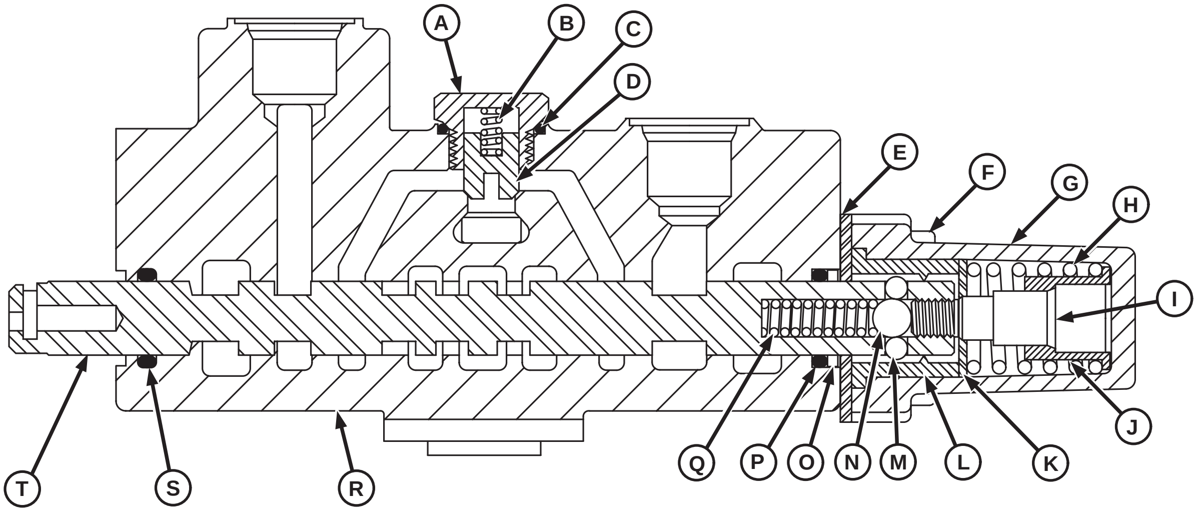


LV7039 –UN–29MAY01

A—Allen Wrench
B—Detent
C—Detent Balls

Continued on next page

JG31785,0000134 –19–29OCT04–12/15



A—Cap
B—Spring
C—O-Ring
D—Load Check
E—Seal Plate
F—Socket Head Screw (2 used)
G—Cap
H—Spring
I—Socket Head Cap Screw
J—Spacer
K—Washer
L—Detent
M—Detent Ball (4 used)
N—Pilot Ball
O—Backup Ring
P—O-Ring
Q—Detent Spring
R—Housing
S—O-Ring
T—Spool

NOTE: Spacer (J) must be installed on the spool it was removed from. Spool number 2 uses a short spacer; spool number 3 uses a long spacer.

15. Install parts (H—K). Tighten socket head cap screw (I) to specification.

Specification	
Plug—Torque	26—30 N•m (19—22 lb-ft)

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

16. Install new O-rings (S and P) and backup ring (O).

Continued on next page

17. Install seal plate (E).

18. Coat spool and bore with clean transmission/hydraulic oil.

19. Install spool.

20. Lightly coat detent assembly with multipurpose grease.

21. Apply MT1247 Locking Liquid, supplied with repair kit, to threads of socket head cap screws (F).

22. Install cap (G) using socket head cap screws (F). Tighten screws to specification.

Specification

Spool Cap Socket Head Cap Screw—Torque .... 12—15 N•m (106—133 lb-in.)

23. Install parts (A—D). Tighten cap (A) to specification.

Specification

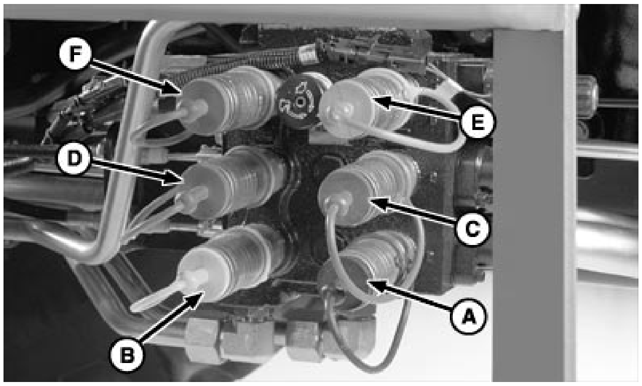
Load Check Cap—Torque .... 34—41 N•m (25—30 lb-ft)

JG31785,0000134 –19–29OCT04–14/15

Install Mid-Mount couplers and tighten to specification. Install dust plugs on couplers in the order shown.

Specification

Mid-Mount Coupler—Torque .... 69 N•m (51 lb-ft)

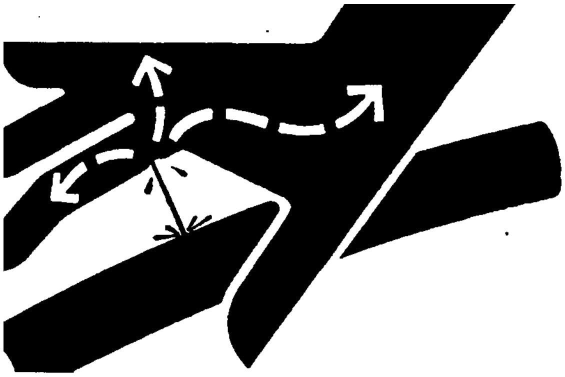


LV9677 –UN–16AUG04

A—Bucket Cylinder—Rod End (Black)
B—Bucket Cylinder—Head End (Yellow)
C—Boom Cylinder—Head End (Blue)
D—Boom Cylinder—Rod End (Red)
E—Third-Function Cylinder—Head End (Orange)
F—Third-Function Cylinder—Rod End (Green)

JG31785,0000134 –19–29OCT04–15/15

Inspect and Replace Hydraulic Lines on Dual or Triple Mid-Mount Control Valve



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

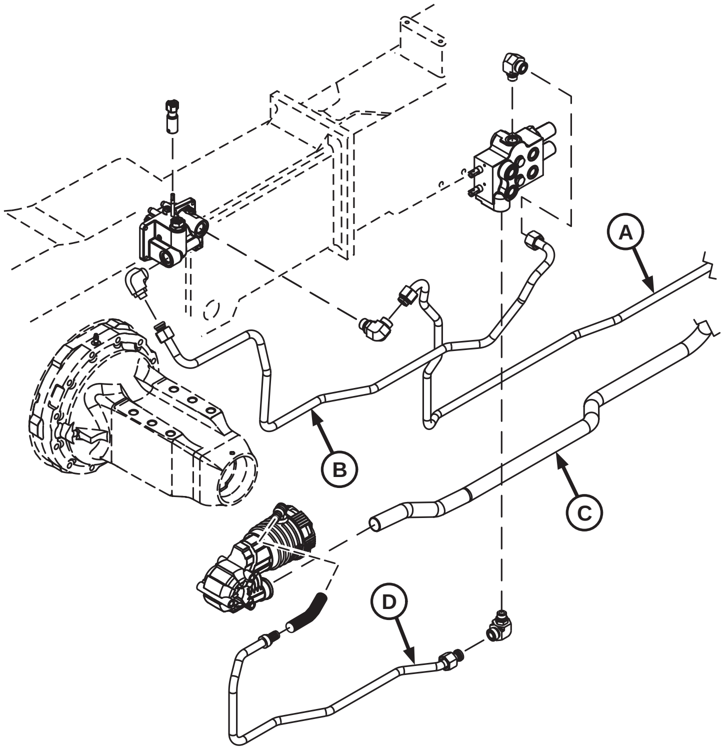
NOTE: SCV and Mid-Mount lines vary depending on tractor options. Remove lines as needed.

1. Remove right rear wheel.

2. Operate SCV and Mid-Mount controls to relieve any pressure in the system.

Continued on next page

JG31785,0000136 –19–29OCT04–1/2



LV10960 –UN–08OCT04

A—Hydraulic Pump-to-RCV
B—RCV-to-SCV Inlet
C—Hydraulic Filter-to-Hydraulic Pump
D—SCV Return-to-Hydraulic Filter

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines is necessary, drain transmission/hydraulic oil.

Mechanical rockshaft control valve is shown. Electro-hydraulic rockshaft is similar.

3. Inspect hydraulic lines for wear or damage. Replace as necessary.
4. Install wheel. Tighten wheel cap screws to specification.

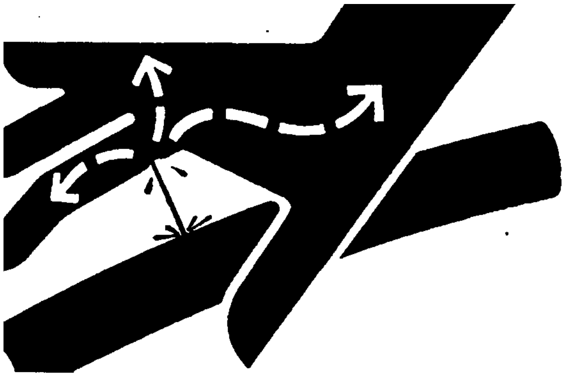
Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque .... 600 N•m (442 lb-ft)

5. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000136 –19–29OCT04–2/2

Inspect and Replace Hydraulic Lines on Dual or Triple Mid-Mount Control Valve With Rear SCV



X9811 –UN–23AUG88

⚠ **CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.**

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

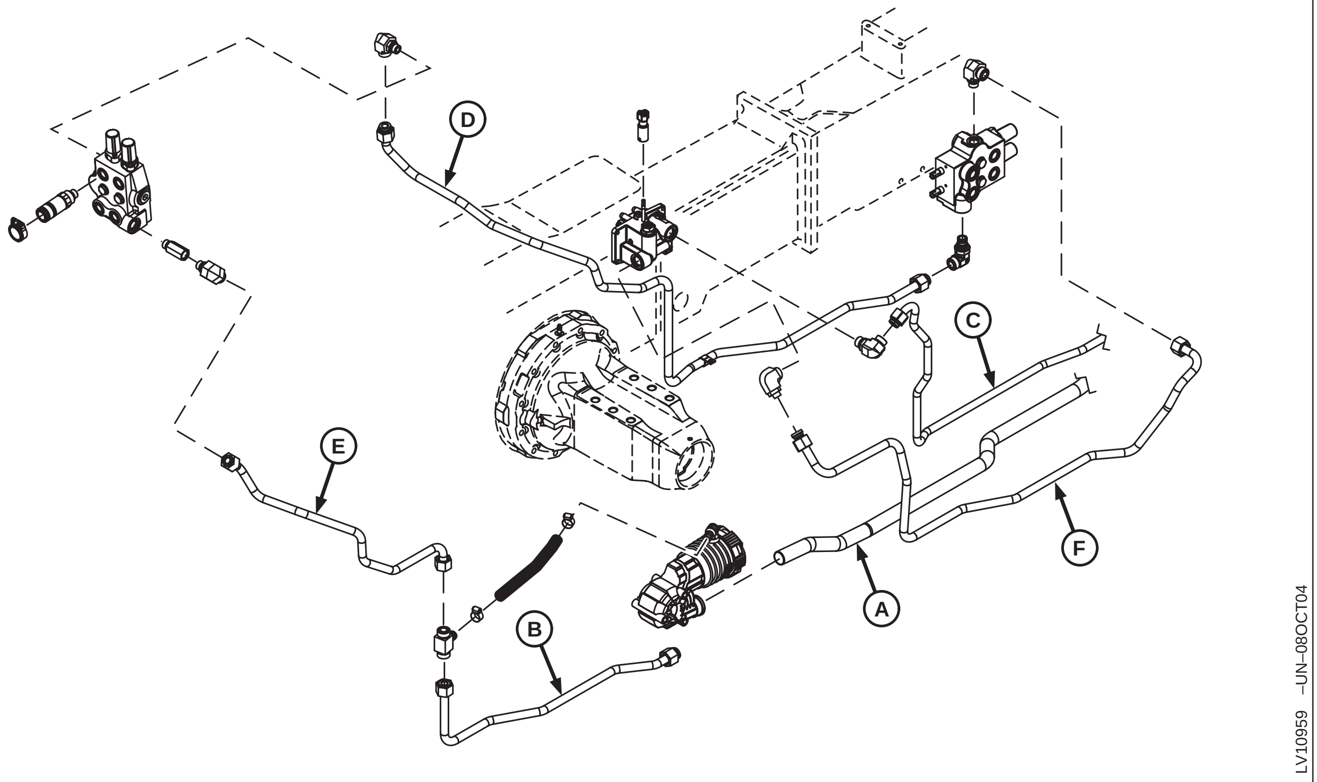
NOTE: SCV and Mid-Mount lines vary depending on tractor options. Remove lines as needed.

1. Remove right rear wheel.

2. Operate SCV and Mid-Mount controls to relieve any pressure in the system.

Continued on next page

JG31785,0000138 –19–29OCT04–1/2



A—Hydraulic Filter-to-Hydraulic Pump Line
B—Mid-Mount Return-to-Hydraulic Filter
C—Hydraulic Pump-to-RCV
D—Mid-Mount Pressure-to-Rear SCV Inlet
E—Rear SCV Return-to-Hydraulic Filter
F—RCV-to-Mid-Mount Inlet

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines is necessary, drain transmission/hydraulic oil.

Mechanical rockshaft control valve is shown. Electro-hydraulic rockshaft is similar.

3. Inspect hydraulic lines for wear or damage. Replace as necessary.
4. Install wheel. Tighten wheel cap screws to specification.

Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque .... 600 N•m (442 lb-ft)

5. Adjust transmission/hydraulic oil level to full mark with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

JG31785,0000138 –19–29OCT04–2/2

Section 80

Miscellaneous Repair

Contents

Page

Group 05—Front Axle—2WD
Service Equipment and Tools 80-05-1
Specifications 80-05-1
Remove and Install Front Axle—2WD 80-05-2
Inspect and Replace Pivot Pin and
Bushings—2WD Axle. 80-05-4
Remove and Install Spindle Assembly—
2WD Axle 80-05-5
Inspect and Replace Spindle Shaft
Bushings—2WD Axle. 80-05-6

Group 10—Wheels
Specifications 80-10-1
Inspect and Replace Front Wheel Bearings . . .80-10-2

Group 15—3-Point Hitch
Specifications 80-15-1
Inspect and Repair Fixed Draft Links 80-15-2
Inspect and Repair Telescoping Draft Links . . .80-15-3
Inspect and Repair Standard Lift Link 80-15-4
Inspect and Repair Adjustable Lift Link 80-15-5
Inspect and Repair Center Link 80-15-6
Remove and Install Draw Bar and Support 80-15-7

Group 20—Fenders
Other Material 80-20-1
Specifications 80-20-1
Remove and Install Fenders—Straddle
Mount 80-20-2
Remove and Install Fenders—Isolated
Open Operator Station Tractors. 80-20-3
Remove and Install Fenders—Cab Tractors . . .80-20-6

Group 25—Hood
Remove and Install Hood 80-25-1

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

OUO1082,00002C8 –19–20SEP04–1/2

Bushing, Bearing, and Seal Driver Set

Used to install bushings in axle housing.

OUO1082,00002C8 –19–20SEP04–2/2

Specifications

Item	Measurement	Specification
Axle	End Play	0.8 mm (0.030 in.)
2WD Axle Pivot Pin Retainer Cap Screw	Torque	135 N•m (100 lb-ft)
Front Wheel Cap Screw	Torque	175 N•m (129 lb-ft)
Tie Rod End Nut	Torque	165 N•m (122 lb-ft)

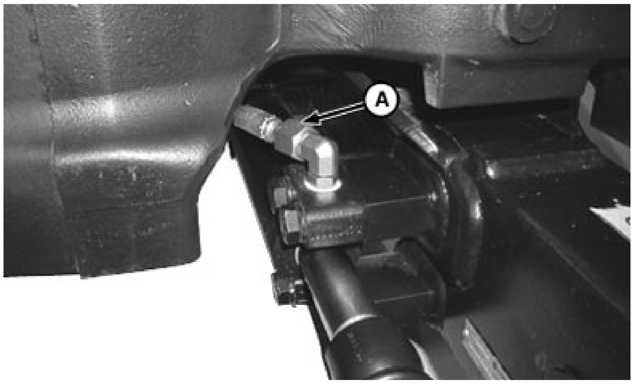
OUO1082,00002CA –19–20SEP04–1/1

Remove and Install Front Axle—2WD

1. Raise front of tractor and remove front wheels.

2. Install support stands under front of clutch housing.

3. Disconnect hydraulic hose (A) from both ends of steering cylinder. Close all openings using caps and plugs.



LV9993 –UN–24AUG04

A—Hydraulic Hose

OUO1082,00002BE –19–09AUG04–1/3

4. Place a floor jack under center of axle.

5. Remove cap screws (A).

6. Remove retainer (C) and shims (D).

7. Remove pivot pin (B).

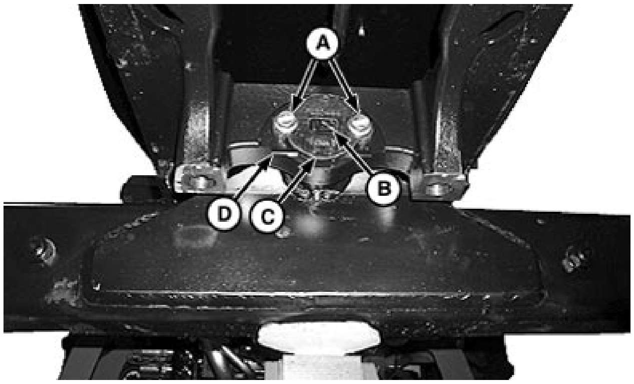
8. Remove axle.

9. Inspect axle, pivot pin, and bushings. Make repairs as necessary. (See Inspect and Replace Pivot Pin and Bushings—2WD Axle in Section 80, Group 05.)

10. Install axle. Lift axle into place and align axle housing hole with pivot pin hole.

11. Install pivot pin.

12. Install retainer (C), shims (D), and cap screws (A). Before tightening cap screws, check axle end play.



LV9998 –UN–24AUG04

A—Cap Screw (2 used)
B—Pivot Pin
C—Retainer
D—Shim (as required)

Continued on next page

OUO1082,00002BE –19–09AUG04–2/3

13. Check axle end play between points (A and B) using feeler gauges.

14. End play should not exceed specification (forward and aft).

Specification

Axle—End Play .... 0.8 mm (0.030 in.)

15. Axle should oscillate freely. Remove or install shims to maintain end play.

16. Tighten pivot pin retainer cap screws previously installed to specification.

Specification

2WD Axle Pivot Pin Retainer Cap Screw—Torque.. 135 N•m (100 lb-ft)

IMPORTANT: Use new O-rings. Used or damaged O-rings will leak.

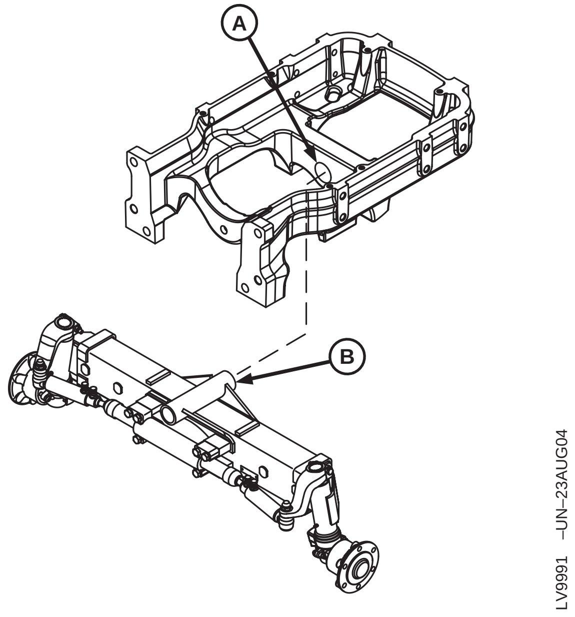
17. Install new O-rings and connect hydraulic hoses.

18. Install wheels. Tighten cap screws to specification.

Specification

Front Wheel Cap Screw—Torque.............................. 175 N•m (129 lb-ft)

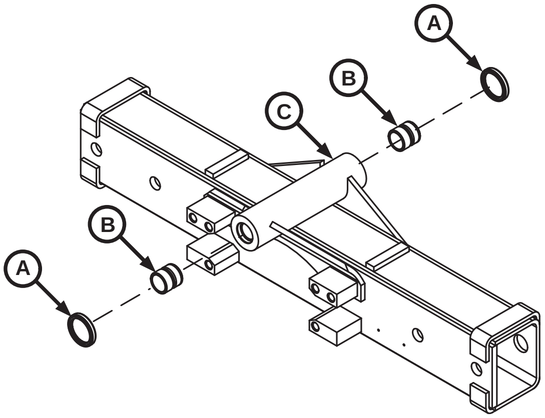
19. Lubricate front axle pivot pin grease fittings with multipurpose grease.



A—Measurement Point on Front Support
B—Measurement Point on 2WD Axle

OUO1082,00002BE –19–09AUG04–3/3

Inspect and Replace Pivot Pin and Bushings—2WD Axle



LV9981 –UN–23AUG04

A—Seal
B—Bushing
C—Axle Pivot

1. Remove front axle. (See Remove and Install Front Axle—2WD in Section 80, Group 05.)

2. Inspect pivot pin and bushings for wear or damage. Replace if necessary.

3. Remove seals (A).

4. Remove bushings (B) from axle using a blind hole puller set.

NOTE: Make sure lubrication grooves in bushings (B) align with lubrication holes in axle pivot (C).

5. Install new bushings and seals using a bushing, bearing, and seal driver set.

6. Install front axle.

OUO1082,00002C1 –19–09AUG04–1/1

Remove and Install Spindle Assembly—2WD Axle

CAUTION: Block pivoting front axle to prevent pinching and personal injury.

1. Install a small block of wood between front axle and tractor frame on both sides.

2. Lift and support front of tractor. Remove wheel.

NOTE: *Tie rod end is a tapered bore fit. Use a ball joint fork or puller to ease removal.*

3. Remove lock nut (A). Remove tie rod end from spindle arm.

4. Place an alignment mark (B) on top of spindle shaft to indicate steering arm slot position.

CAUTION: Spindle assembly is heavy. Properly support spindle assembly before removing steering arm retaining cap screw and lock nut.

5. Remove cap screw (C) and lock nut (D) to remove steering arm (I).

6. Remove spindle assembly (H).

7. Inspect spindle shaft for wear or damage. Replace if necessary.

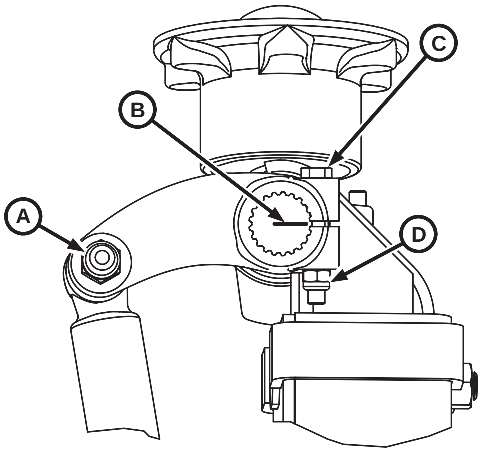
8. Inspect spindle shaft bearings, seals and bushings for wear or damage. (See Inspect and Replace Spindle Shaft Bushings—2WD Axle in Section 80, Group 05.)

9. Install spindle assembly.

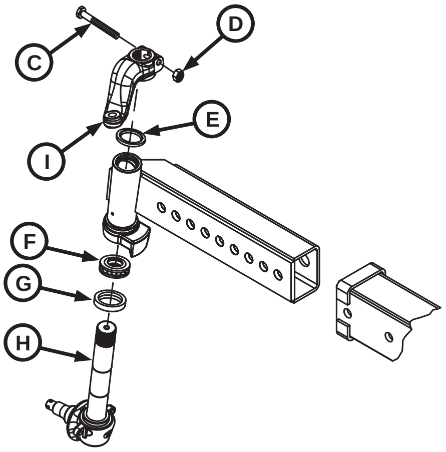
10. Install steering arm on spindle shaft using alignment mark (B) previously made on shaft to locate arm slot to spindle.

11. Install retaining cap screw and lock nut into arm.

12. Connect tie rod end. Install and tighten lock nut to specification.



LV9989 –UN–24AUG04



LV9990 –UN–24AUG04

A—Lock Nut
B—Alignment Mark
C—Cap Screw
D—Lock Nut
E—Seal
F—Bearing
G—Seal
H—Spindle Assembly
I—Steering Arm

Continued on next page

Specification

Tie Rod End Nut—Torque .... 165 N•m (122 lb-ft)

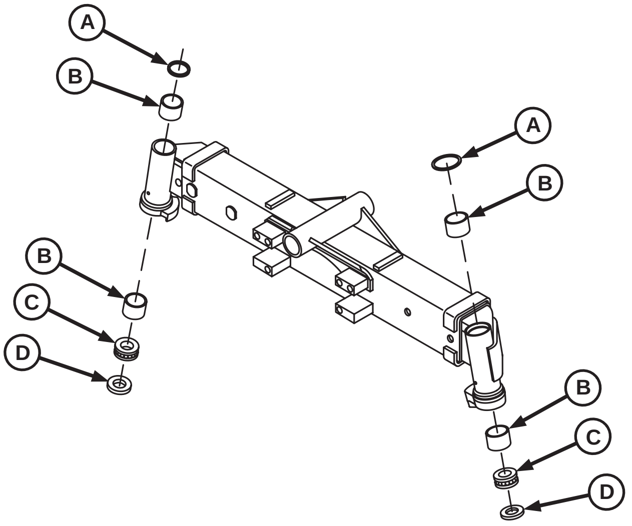
13. Install wheel and tighten wheel cap screws to specification.

Specification

Front Wheel Cap Screw—Torque .... 175 N•m (129 lb-ft)

OUO1082,00002C0 –19–09AUG04–2/2

Inspect and Replace Spindle Shaft Bushings—2WD Axle



LV9988 –UN–24AUG04

A—Seal	**B—Bushing**	**C—Bearing**	**D—Seal**

1. Inspect bearings (C) for wear or damage. Bearings must rotate smoothly and freely. Replace if necessary.

2. Inspect spindle shaft and bushings (B) for scoring or damage. Replace if necessary.

3. Remove bushings from axle using a blind hole puller set.

4. Install new bushings (B) and seals (A and D) using a bushing, bearing, and seal driver set. Install seals with seal lips away from axle.

5. Apply multipurpose grease to all parts and assemble.

OUO1082,00002BF –19–09AUG04–1/1

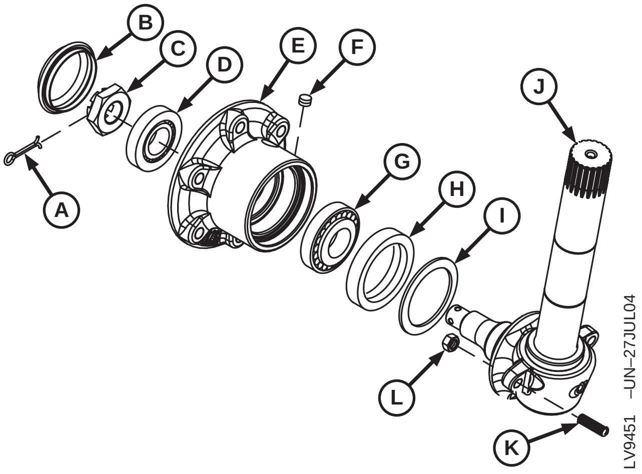
Group 10
Wheels

Specifications

Item	Measurement	Specification
Front Wheel Cap Screw	Torque	175 N•m (129 lb-ft)

OUO1082,00002AE –19–22JUL04–1/1

Inspect and Replace Front Wheel Bearings



A—Cotter Pin
B—Cover
C—Retaining Nut
D—Outer Bearing Cup and Cone
E—Wheel Hub
F—Lubrication Fitting
G—Inner Bearing Cup and Cone
H—Seal
I—Spacer
J—Spindle
K—Steering Stop
L—Jam Nut

1. Remove wheel.
2. Remove cover (B), cotter pin (A), and nut (C) to remove wheel hub (E).
3. Remove bearing cones and cups (D and G) and seal (H) using a brass drift and hammer or puller.
4. Remove spacer (I) using a puller.
5. Clean all parts and allow to air dry.
6. Inspect parts for wear or damage. Replace as necessary.
7. Pack bearing cones with multipurpose grease.
8. Install inner and outer bearing cups into hub using a bearing, bushing, and seal driver set.
9. Position the inner bearing cone on the inner cup. Install seal (H) with lips of seal toward the inner bearing. Install using a bearing, bushing, and seal driver set.
10. Install spacer (I) onto spindle with the small OD of spacer facing outwards, away from spindle.
11. Install hub assembly, outer bearing cone, washer, and nut. Tighten until a slight drag is felt while turning hub. Back off nut just enough to install cotter pin in hole of spindle.
12. Apply flexible sealant to mating surfaces of cover (B) and hub (E). Install cover.
13. Install wheel. Tighten cap screws to specification.

Specification

Front Wheel Cap Screw—Torque .... 175 N•m (129 lb-ft)

OUO1082,00002BB –19–02AUG04–1/1

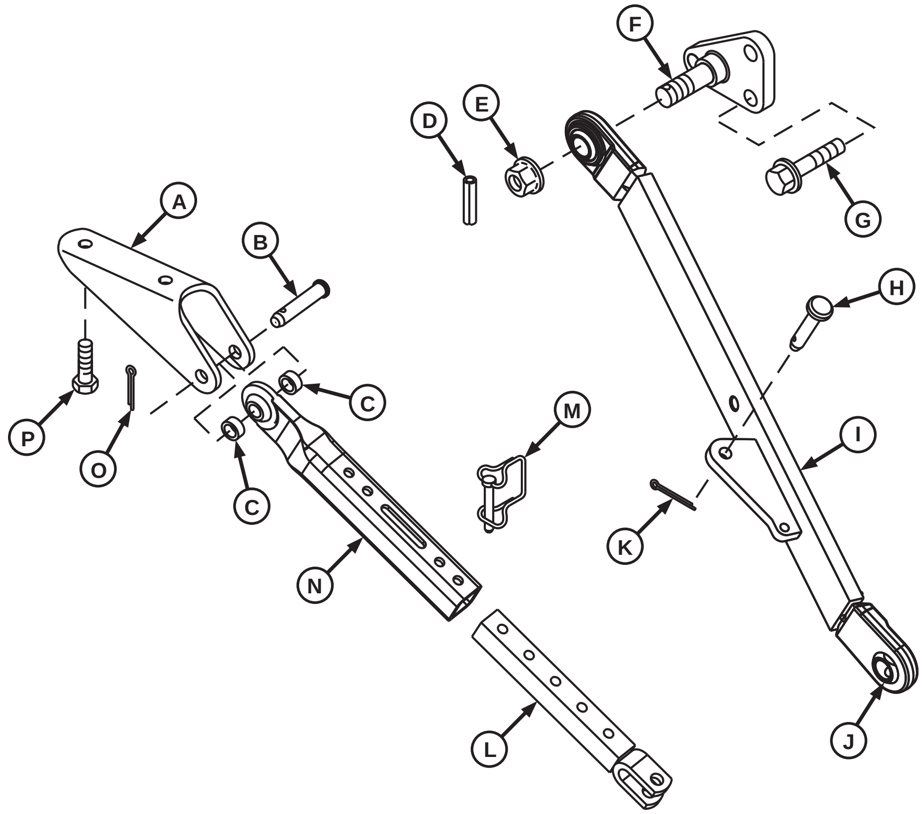
3-Point Hitch

Specifications

Item	Measurement	Specification
Draft Link Support Cap Screw	Torque	200 N•m (148 lb-ft)
Stabilizer Bracket Cap Screw (Fixed Draft Links)	Torque	350 N•m (258 lb-ft)
Stabilizer Bracket Cap Screw (Telescoping Draft Links)	Torque	300 N•m (221 lb-ft)
Draw Bar Support Rear Cap Screw	Torque	200 N•m (148 lb-ft)
Draw Bar Support Bottom Cap Screw	Torque	310 N•m (229 lb-ft)
Draw Bar Support Side Cap Screw	Torque	200 N•m (148 lb-ft)

OUO1082,00002B8 –19–02AUG04–1/1

Inspect and Repair Fixed Draft Links



Left Side Shown

A—Stabilizer Bracket	**F—Support**	**J—Ball**	**N—Outer Stabilizer**
B—Pin	**G—Draft Link Support Cap Screw (3 used)**	**K—Cotter Pin**	**O—Cotter Pin**
C—Spacer (2 used)	**H—Pin**	**L—Inner Stabilizer**	**P—Stabilizer Bracket Cap Screw (2 used)**
D—Spring Pin	**I—Draft Link**	**M—Pin**	
E—Flanged Nut			

1. Inspect draft link assembly for wear or damage. Replace as necessary.

2. Tighten draft link support cap screws (G) to specification.

Specification

Draft Link Support Cap Screw—Torque .... 200 N•m (148 lb-ft)

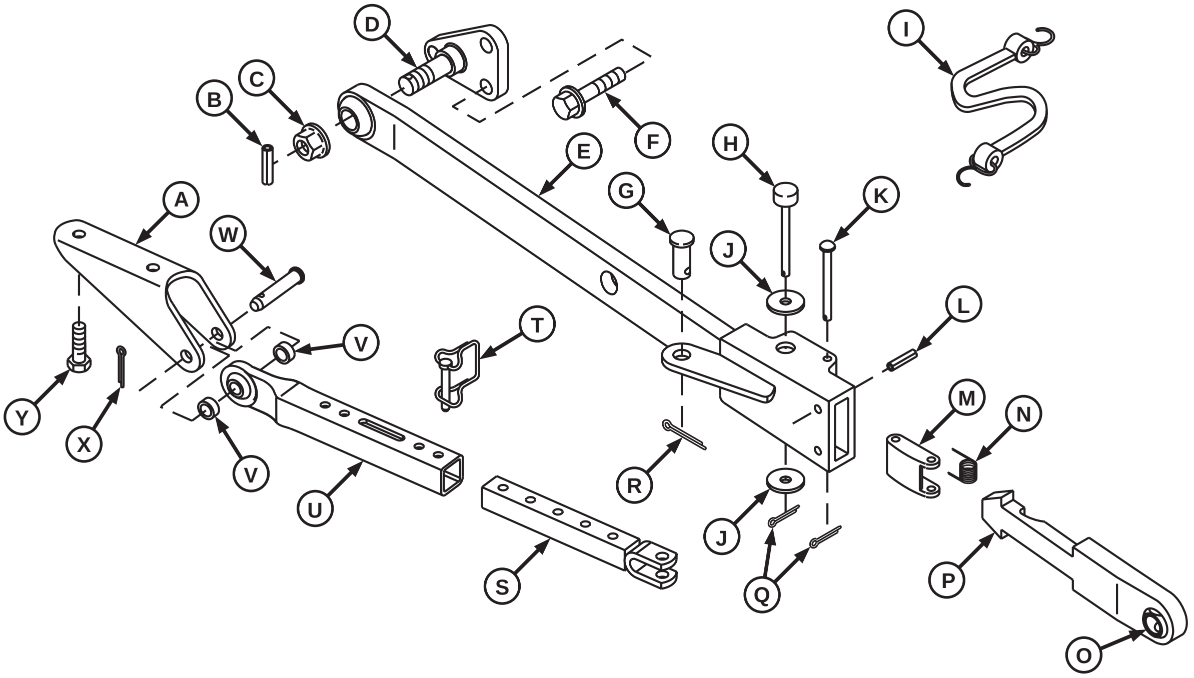
3. Tighten stabilizer bracket cap screws (P) to specification.

Specification

Stabilizer Bracket Cap Screw (Fixed Draft Links)—Torque .... 350 N•m (258 lb-ft)

OUO1082,00002AF –19–23JUL04–1/1

Inspect and Repair Telescoping Draft Links



Left Side Shown

A—Stabilizer Bracket
B—Spring Pin
C—Flanged Nut
D—Support
E—Draft Link
F—Draft Link Support Cap Screw (3 used)
G—Pin
H—Push Button
I—Strap
J—Sealing Washer
K—Pin
L—Spring Pin
M—Pawl
N—Torsion Spring
O—Ball
P—Draft Link End
Q—Cotter Pin (2 used)
R—Cotter Pin
S—Inner Stabilizer
T—Pin
U—Outer Stabilizer
V—Spacer (2 used)
W—Pin
X—Cotter Pin
Y—Stabilizer Bracket Cap Screw (2 used)

1. Inspect draft link assembly for wear or damage. Replace as necessary.

2. Tighten draft link support cap screws (F) to specification.

Specification

Draft Link Support Cap Screw—Torque .... 200 N•m (148 lb-ft)

3. Tighten stabilizer bracket cap screws (Y) to specification.

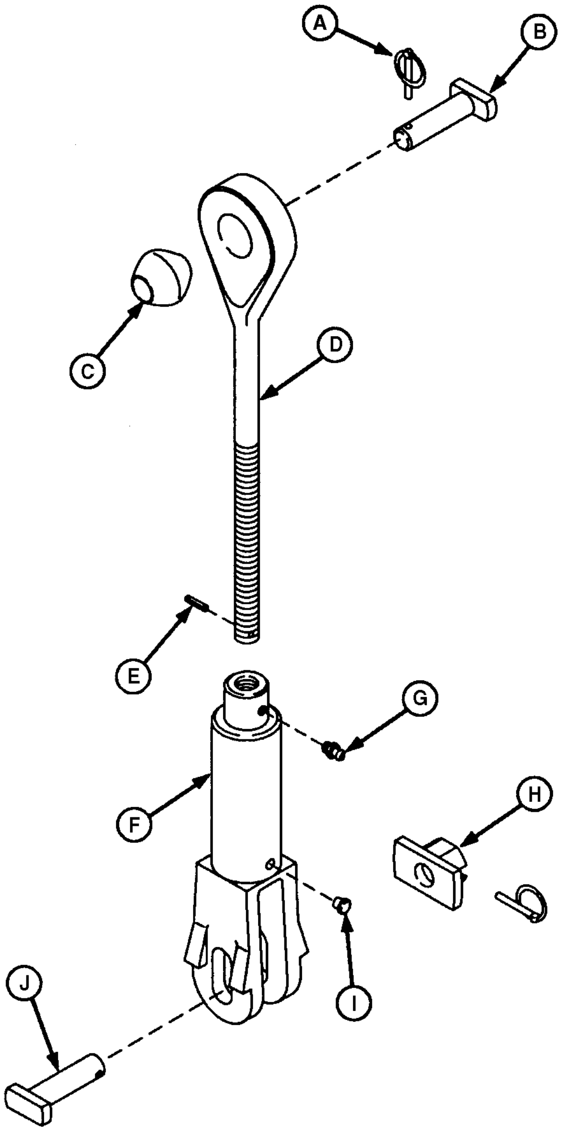
Specification

Stabilizer Bracket Cap Screw (Telescoping Draft Links)—Torque... 300 N•m (221 lb-ft)

OUO1082,00002B0 –19–23JUL04–1/1

Inspect and Repair Standard Lift Link

1. Remove plugs (I).
2. Thread link end (D) in until spring pin (E) is centered with plug holes.
3. Remove spring pin using a punch and hammer.
4. Thread link end out.
5. Inspect all parts for wear or damage. Replace as necessary.
6. Assemble all parts.
7. Lubricate lift link assembly at lubrication fittings (G) using multipurpose grease.



LV393AE –UN–15JUL97

A—Quick-Lock Pin (2 used)
B—Pin
C—Ball
D—Lift Link End
E—Spring Pin
F—Lift Link Body
G—Lubrication Fitting
H—Retainer
I—Plug (2 used)
J—Pin

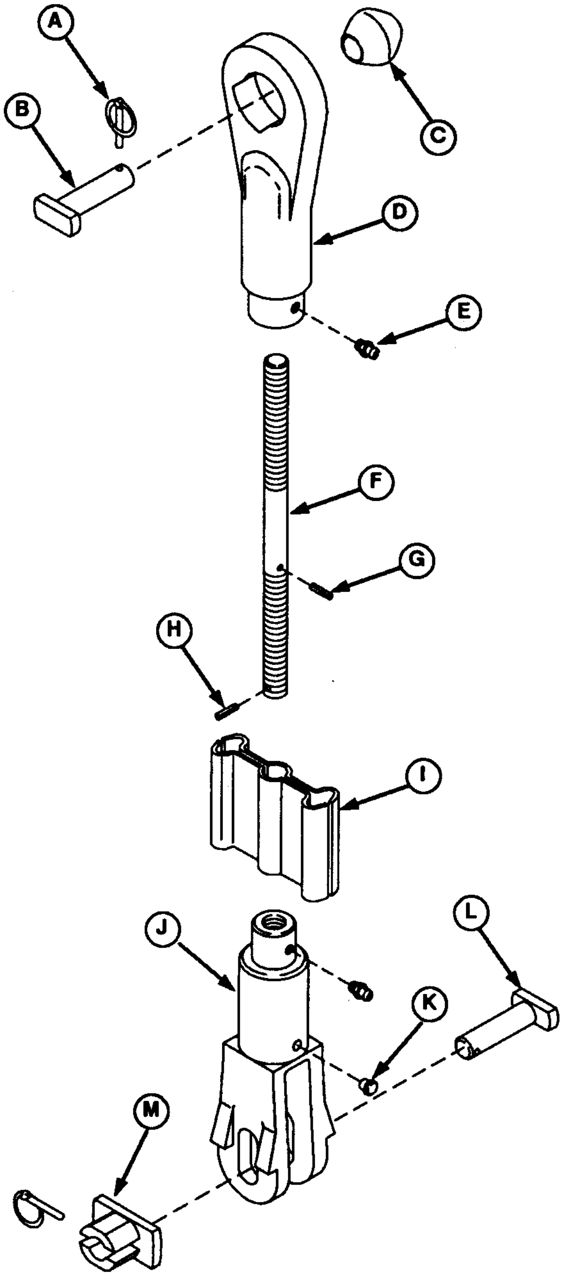
OUO1082,00002B9 –19–02AUG04–1/1

Inspect and Repair Adjustable Lift Link

1. Remove plugs (K).
2. Thread link body (J) in until spring pin (H) is centered with plug holes.
3. Remove spring pin using a punch and hammer.
4. Disassemble all parts.
5. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Install handle (I) with notches toward lift link body (J).

6. Assemble all parts.
7. Lubricate lift link assembly at lubrication fittings (E) using multipurpose grease.

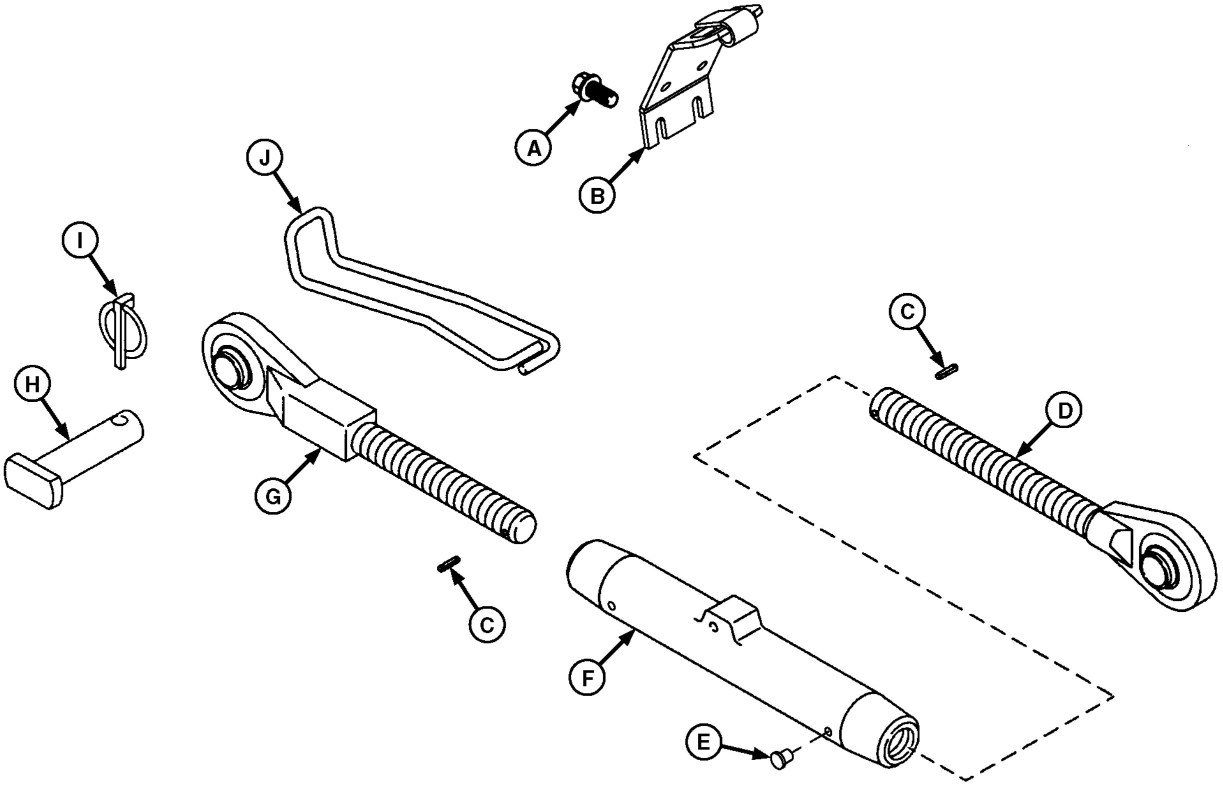


LV489AE –UN–26FEB92

A—Quick-Lock Pin (2 used)
B—Pin
C—Ball
D—Lift Link End
E—Lubrication Fitting (2 used)
F—Link Rod
G—Spring Pin
H—Spring Pin
I—Handle
J—Lift Link Body
K—Plug (2 used)
L—Pin
M—Retainer

OUO1082,00002BA –19–02AUG04–1/1

Inspect and Repair Center Link



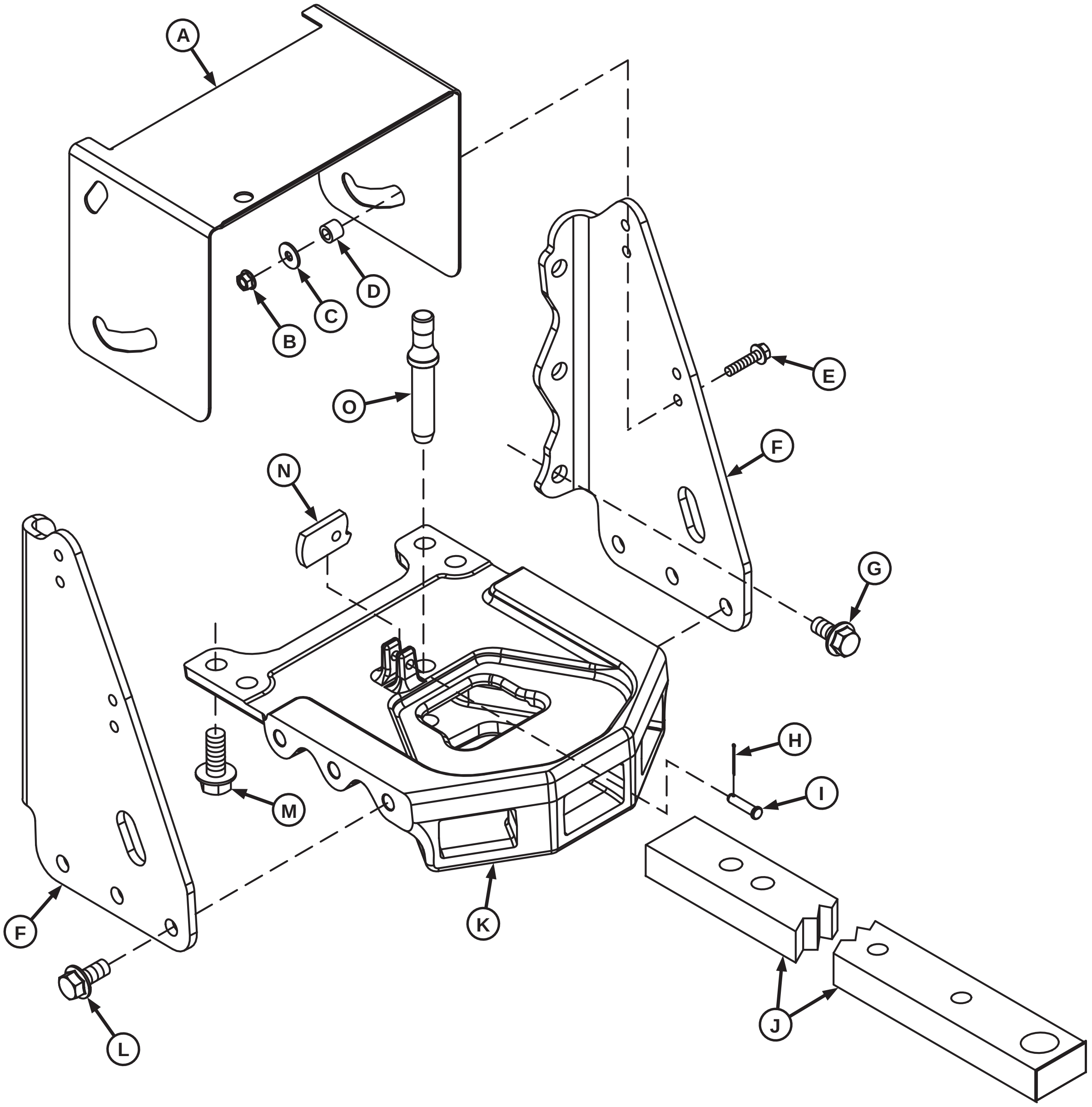
A—Cap Screw (2 used)	**D—Center Link End**	**G—Center Link End**	**I—Quick-Lock Pin**
B—Bracket	**E—Plug (4 used)**	**H—Pin**	**J—Lever**
C—Spring Pin (2 used)	**F—Center Link Body**		

NOTE: Bracket (B) is mounted to draft-sensing assembly. Loosen cap screws (A) to remove bracket.

1. Remove plugs (E).
2. Thread link ends (D and G) in until spring pins (C) are centered with plug holes.
3. Remove spring pins using a punch and hammer.
4. Disassemble all parts.
5. Inspect all parts for wear or damage. Replace as necessary.
6. Apply multipurpose grease to ID at both ends of center link body (F).
7. Assemble all parts.

OUO1082,00002B1 –19–23JUL04–1/1

Remove and Install Draw Bar and Support



LV9859 –UN–02AUG04

A—Shield
B—Nut
C—Washer
D—Bushing
E—Cap Screw
F—Side Plate
G—Cap Screw (6 used)
H—Cotter Pin
I—Pin
J—Draw Bar
K—Support
L—Cap Screw (6 used)
M—Cap Screw (4 used)
N—Latch
O—Pin

1. Remove parts (A—E).
2. Lift latch (N) and pull pin (O) upward.
3. Remove draw bar (J).

NOTE: Use a floor jack under support (K) to support weight during removal.

4. Install floor jack under support (K) and remove cap screws (G and M) to remove support asembly.

Continued on next page

5. Remove cap screws (L) to remove side plates (F).

6. Inspect all parts for wear or damage. Replace if necessary.

7. Install parts (A—O). Tighten cap screws (L, G and M) to specification.

Specification

Draw Bar Support Rear Cap Screw—Torque	200 N•m (148 lb-ft)
Draw Bar Support Bottom Cap Screw—Torque	310 N•m (229 lb-ft)
Draw Bar Support Side Cap Screw—Torque	200 N•m (148 lb-ft)

OUO1082,00002B2 –19–23JUL04–2/2

Other Material

Number	Name	Use
PM37521 (U.S.)	Silicone Sealer	Used to seal gaps between fender and cab frame mating surfaces.

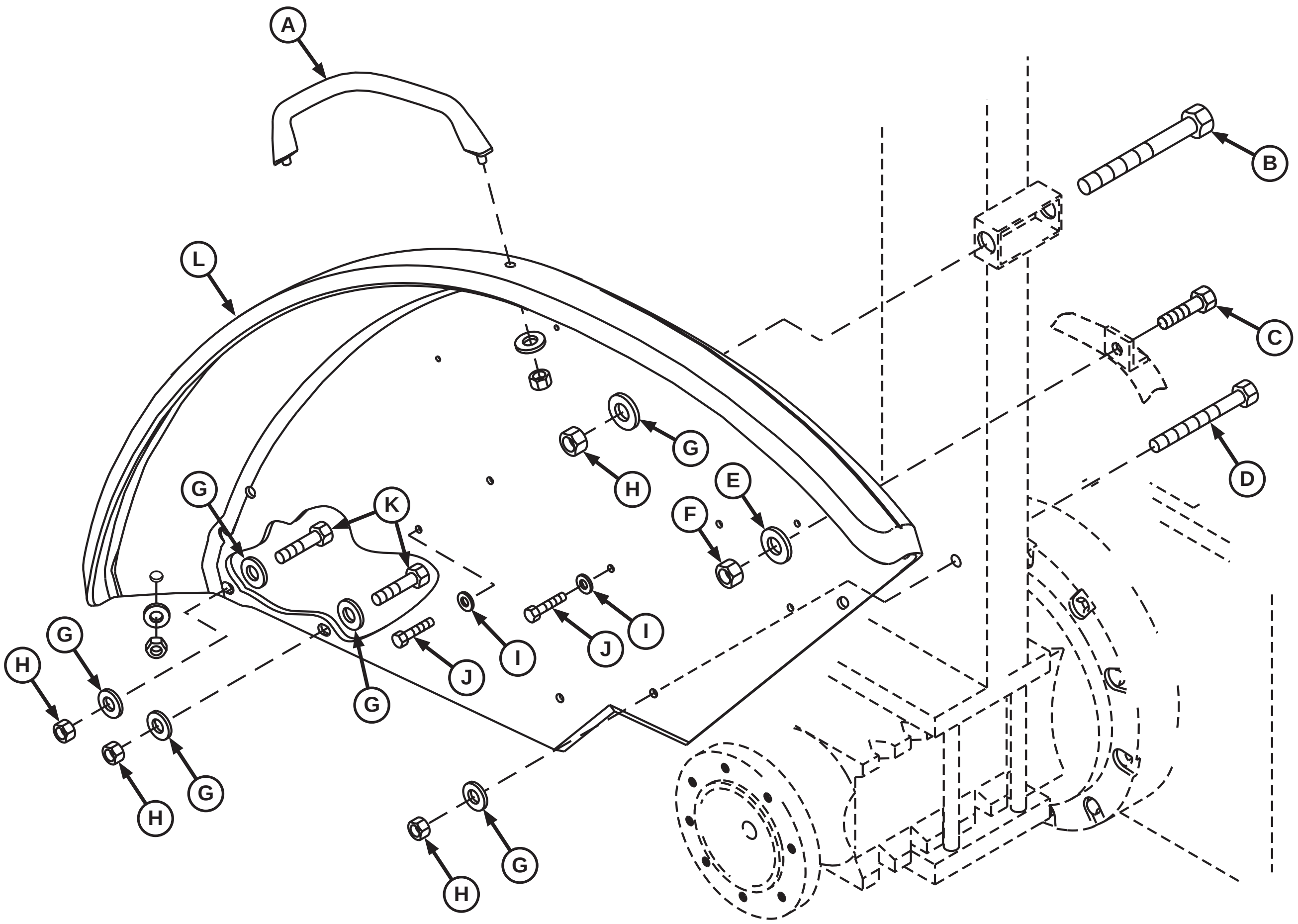
OUO1082,00002BC –19–02AUG04–1/1

Specifications

Item	Measurement	Specification
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

OUO1082,00002BD –19–02AUG04–1/1

Remove and Install Fenders—Straddle Mount



A—Handle
B—Cap Screw
C—Cap Screw
D—Cap Screw
E—Flat Washer
F—Nut
G—Flat Washer
H—Nut
I—Flat Washer
J—Cap Screw
K—Cap Screw
L—Fender

NOTE: Left-side fender shown; right-side fender removal is similar.

1. Raise rear of tractor and remove rear wheels.
2. Install support stands under left- and right-rear axle housings.

NOTE: Picture shown is for tractors with standard equipment. Some optional equipment is attached to the fender. Your tractor may have additional fasteners depending on optional equipment that is installed.

3. Remove cap screws, nuts, and washers (B—K).

Continued on next page

4. Remove fender (L).

5. If fender is being replaced, remove handle (A).

6. Install fenders.

7. Install optional equipment (as required).

8. Install rear wheels. Tighten wheel cap screws to specification.

Specification

Rear Wheel-to-Axle Cap Screw
M20—Torque .... 600 N•m (442 lb-ft)

OUO1082,00002B3 –19–28JUL04–2/2

Remove and Install Fenders—Isolated Open Operator Station Tractors

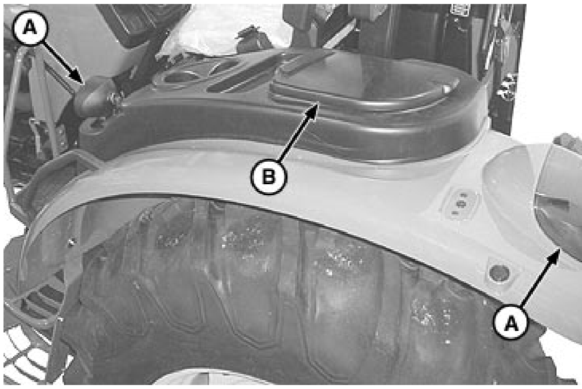
NOTE: Left-side fender shown; right-side fender removal is similar.

1. Remove work and tail light assemblies (A) from fender.

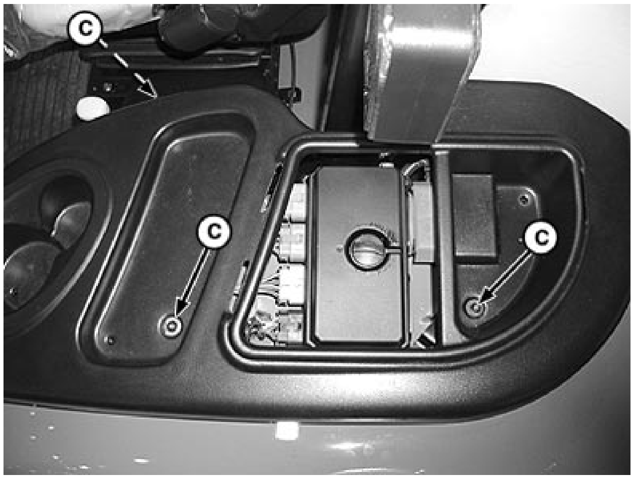
2. Left fender: Remove cover (B).

3. Remove three screws (C).

A—Light Assemblies
B—Cover
C—Screw (3 used)



LV9904 –UN–03AUG04



LV11745 –UN–19NOV04

Continued on next page

OUO1082,00002B4 –19–28JUL04–1/3

4. Remove six screws (A) and panel (B).

5. Disconnect harness at EH hitch control switch, if equipped.

6. Remove carriage screws, washers and nuts (D).

7. Remove cap screws and washers (C).

8. Route tail light harness (E) away from fender.

9. Left fender: Remove three screws (F) and support electrical load center (G) on tractor.

NOTE: If replacing fender, remove handle and all plugs for installation on new fender.

10. Remove fender from tractor.

11. Left fender: Install electrical load center (G) on fender with three screws (F).

12. Install fender onto tractor with cap screws and washers (C).

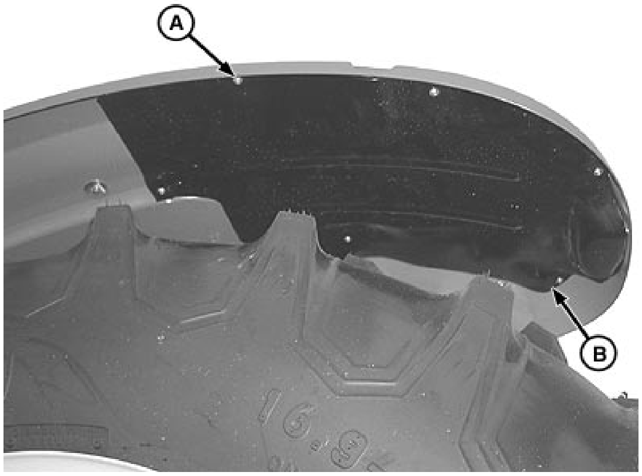
13. Install carriage screws, washers and nuts (D).

14. Route tail light harness (E) through fender.

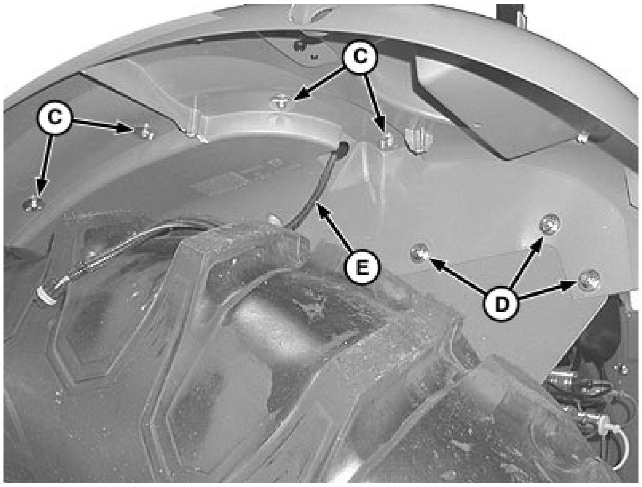
15. Connect harness at EH hitch control switch, if equipped.

16. Install panel (B) with six screws (A).

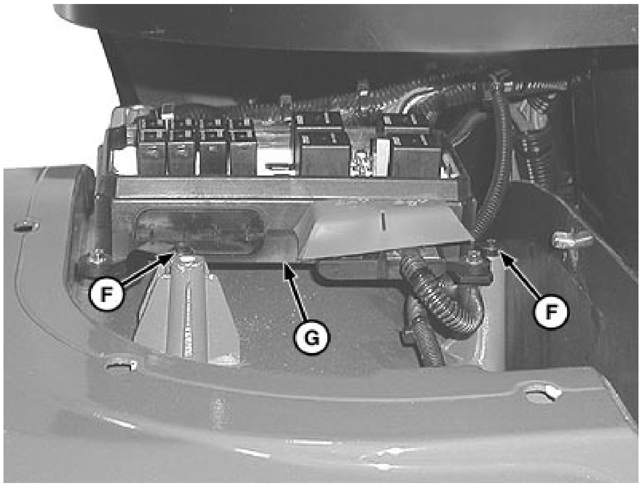
A—Screws (6 used)
B—Panel
C—Cap Screw and Washer (7 used)
D—Carriage Screw, Washer and Nut (6 used)
E—Tail Light Harness
F—Screw (3 used)
G—Electrical Load Center



LV8764 –UN–02SEP03



LV8761 –UN–02SEP03



LV8760 –UN–02SEP03

Continued on next page

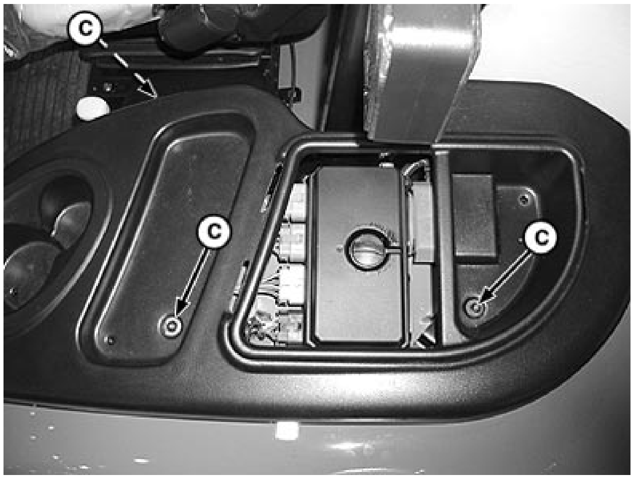
OUO1082,00002B4 –19–28JUL04–2/3

17. Install three screws (C).

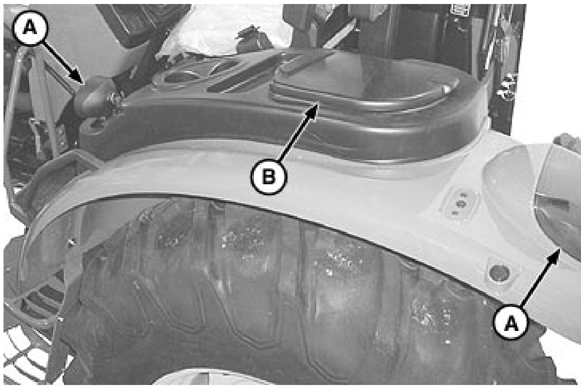
18. Left fender: Install cover (B).

19. Install work and tail light assemblies (A).

A—Light Assemblies
B—Cover
C—Screw (3 used)



LV11745 –UN–19NOV04



LV9904 –UN–03AUG04

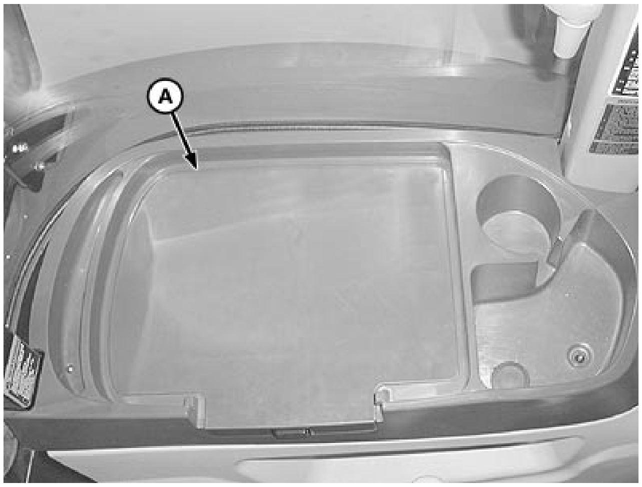
OUO1082,00002B4 –19–28JUL04–3/3

Remove and Install Fenders—Cab Tractors

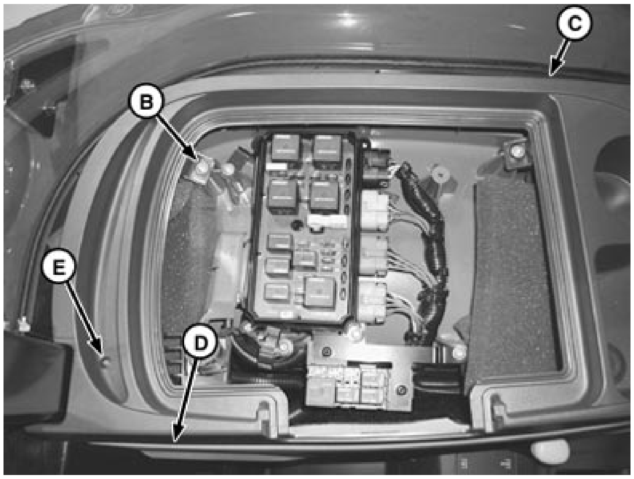
NOTE: Left-side fender shown; right-side fender removal is similar.

1. Remove cover (A).
2. Remove screws (B and E), console (C) and upholstery panel (D).
3. Remove sound control foam pads.
4. Remove screws (F) and support electrical load center away from fender.

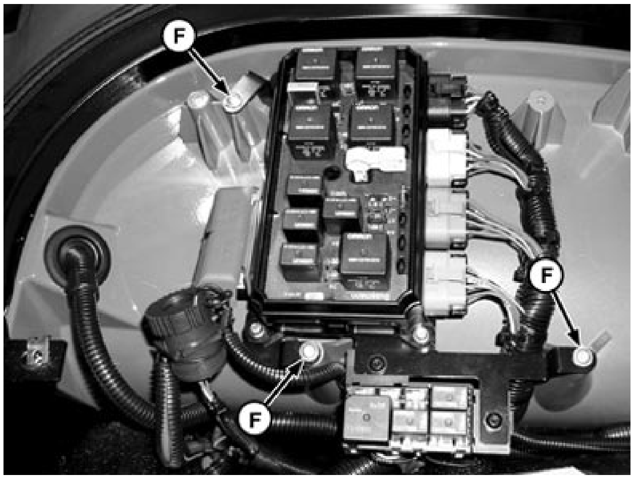
A—Cover
B—Screw (3 used)
C—Console
D—Upholstery Panel
E—Screw
F—Screw (3 used)



LV8768 –UN–02SEP03



LV9913 –UN–02AUG04



LV9914 –UN–02AUG04

Continued on next page

OUO1082,00002B6 –19–28JUL04–1/5

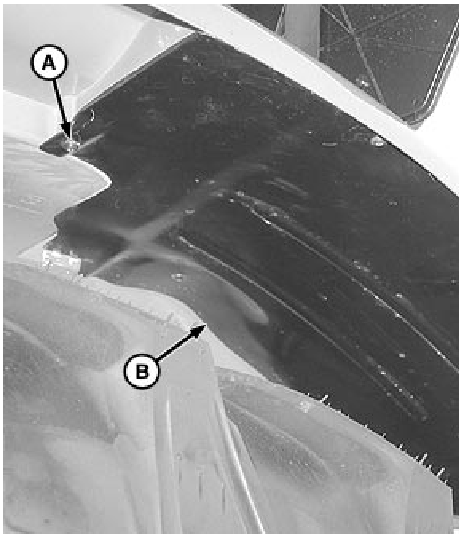
5. Remove six screws (A) and panel (B).

6. Disconnect electrical connector (C) from tail light harness.

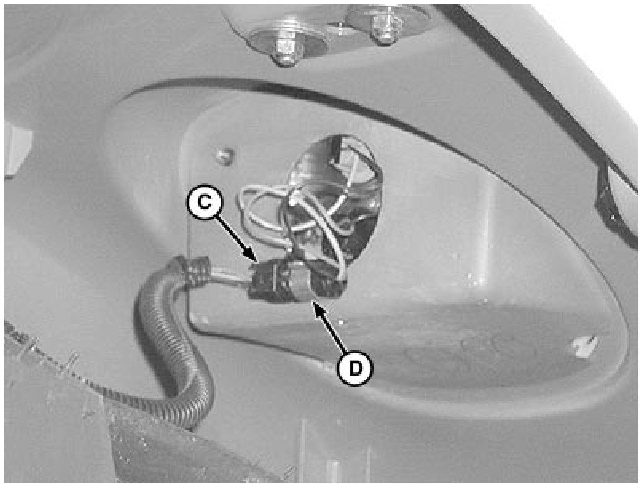
7. Remove spring clip (D) from fender.

8. Disconnect harness at EH hitch control switch, if equipped.

A—Screw (6 used)
B—Panel
C—Electrical Connector
D—Spring Clip



LV8770 –UN–02SEP03



LV8772 –UN–02SEP03

Continued on next page OUO1082,00002B6 –19–28JUL04–2/5

NOTE: Slow moving vehicle sign, bracket and tail light assembly need to be removed only if replacing fender.

9. Remove slow moving vehicle sign and mounting bracket (A).

10. Remove tail light assembly (B).

11. Route tail light wiring harness (D) away from fender.

12. Remove cap screws, nuts and washers (E).

13. Remove cap screws and washers (C).

14. Remove fender from tractor.

15. Remove sealant from fender and cab frame mating surfaces.

16. Check all parts for wear or damage. Replace parts as necessary.

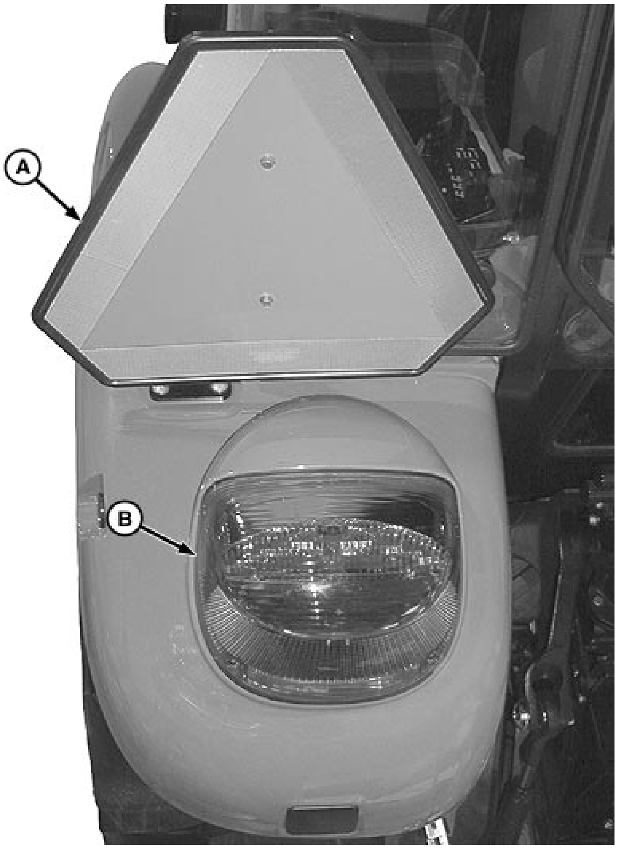
17. Install fender with sealant on tractor using cap screws and washers (C).

18. Install cap screws, nuts and washers (E).

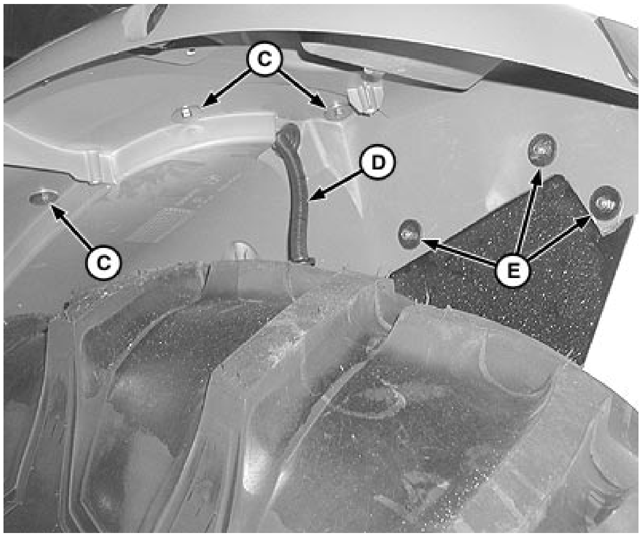
19. Route tail light wiring harness (D) through hole in fender.

20. If removed, install tail light assembly (B).

21. If removed, install slow moving vehicle sign and mounting bracket (A).



LV8771 –UN–02SEP03



LV8773 –UN–02SEP03

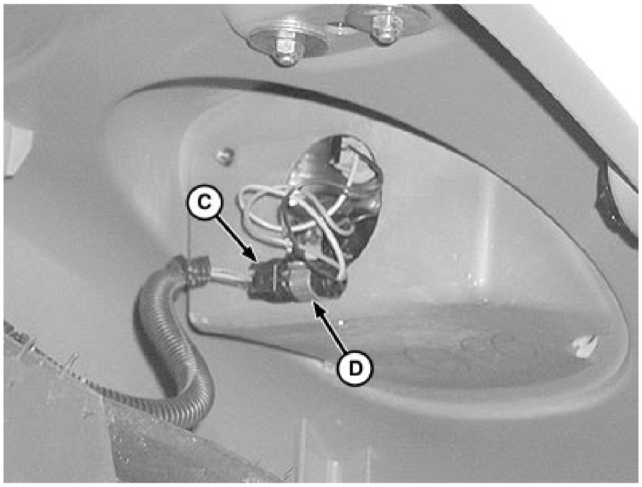
A—Slow Moving Vehicle Sign and Mounting Bracket
B—Tail Light Assembly
C—Cap Screw and Washer (7 used)
D—Tail Light Wiring Harness
E—Cap Screw, Nut and Washer (6 used)

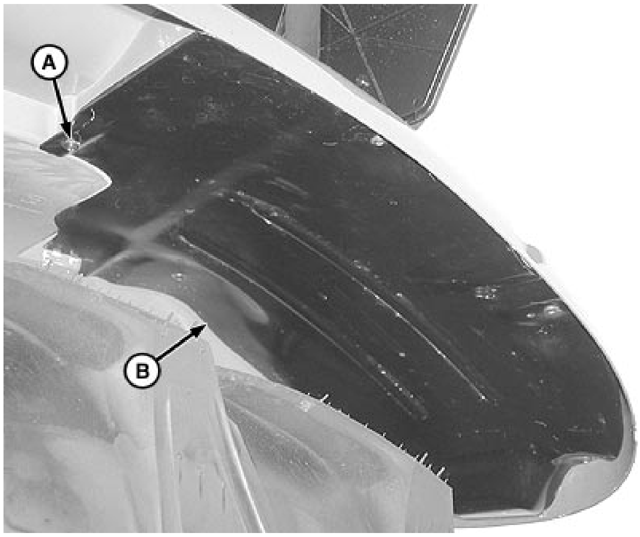
Continued on next page

OUO1082,00002B6 –19–28JUL04–3/5

22. Install spring clip (D) on fender.
23. Connect electrical connector (C) to tail light harness.
24. Connect harness at EH hitch control switch, if equipped.
25. Install panel (B) and six screws (A).

A—Screw (6 used)
B—Panel
C—Electrical Connector
D—Spring Clip





Continued on next page

OUO1082,00002B6 –19–28JUL04–4/5

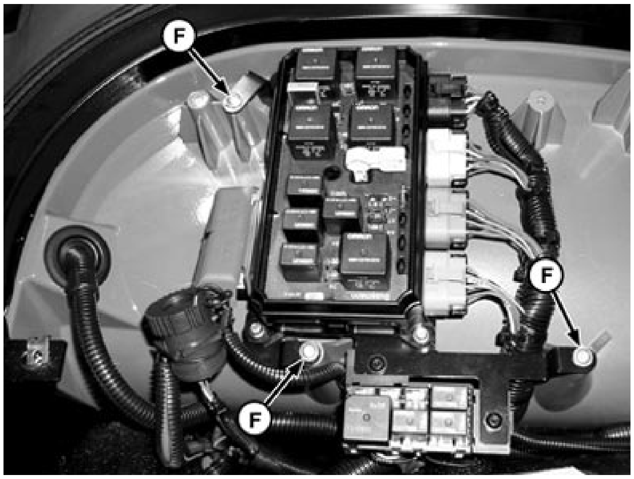
26. Install electrical load center on fender with screws (F).

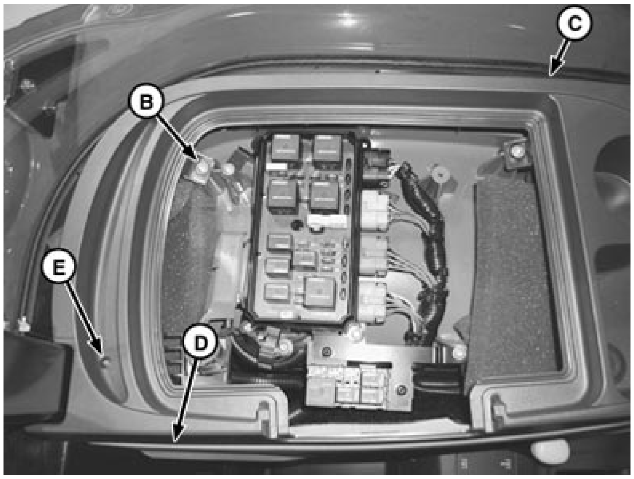
27. Install sound control foam pads.

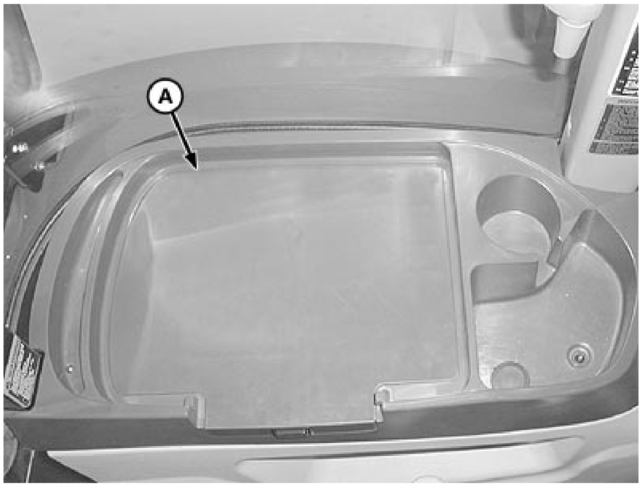
28. Install upholstery panel (D) and console (C) with screws (B and E).

29. Install cover (A).

A—Cover
B—Screw (3 used)
C—Console
D—Upholstery Panel
E—Screw
F—Screw (3 used)

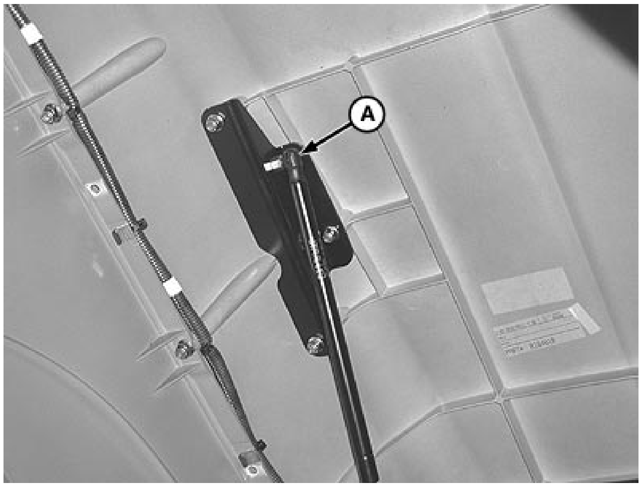

F
F
F
LV9914 –UN–02AUG04


C
B
E
D
LV9913 –UN–02AUG04

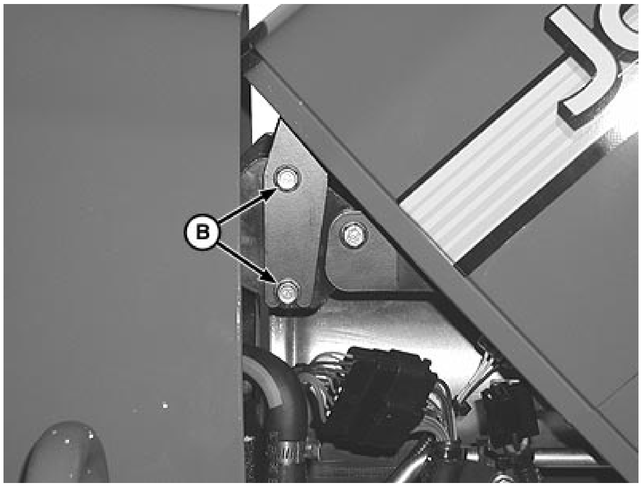

A
LV8768 –UN–02SEP03

OUO1082,00002B6 –19–28JUL04–5/5

Remove and Install Hood



LV9873 –UN–29JUL04



LV9872 –UN–22OCT04

1. Remove hood cable.
2. Disconnect head lamp wire harness.

CAUTION: Support hood before removing struts or hinge cap screws.

IMPORTANT: Do not completely remove hood strut clip; damage may occur.

3. Slightly dislodge and lift clip (A) with a small screwdriver to release strut from ball stud.
4. Remove cap screws (B) and hood.
5. Make repairs as necessary.
6. Install hood and cap screws (B).
7. Slightly dislodge and lift clip (A) with a small screwdriver and push clip into position to retain strut on ball stud.
8. Connect head lamp wire harness.
9. Install hood cable.

A—Clip
B—Cap Screw (4 used)

JG31785,0000226 –19–24NOV04–1/1

Section 90
Operator Station Repair

Contents

Page

Group 05—Seat and Support
Specifications 90-05-1
Remove and Install Seat and Support—Straddle Mount 90-05-1
Remove and Install Seat and Support—Isolated Open Operator Station and Cab Tractors. 90-05-2
Remove and Install Seat and Support—Cab Tractors With Air Seat 90-05-3

Group 06—Control Console and Panel
Remove and Install Right-Side Control Console—Straddle Mount 90-06-1
Remove and Install Left-Side Control Console—Straddle Mount 90-06-3
Remove and Install Right-Side Control Console—Isolated Open Operator Station Tractors 90-06-4
Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors 90-06-7
Remove and Install Right-Side Control Console—Cab Tractors 90-06-8
Remove and Install Left-Side Control Console—Cab Tractors 90-06-14
Remove and Install Cowl Cover 90-06-15
Remove and Install Center Control Console—5603 90-06-17

Group 10—ROLL-GARD
Specifications 90-10-1
Remove and Install ROLL-GARD™—Straddle Mount 90-10-1
Remove and Install ROLL-GARD™—Isolated Open Operator Station 90-10-3

Group 15—Cab Components
Essential Tools 90-15-1
Service Equipment and Tools 90-15-1
Other Material 90-15-1
Specifications 90-15-2
Remove, Inspect, and Install Cab Interior Recirculating Air Filters 90-15-3
Remove, Inspect, and Install Exterior Cab Intake Air Filter 90-15-4
Remove and Install Headliner 90-15-5

Page

Remove and Install Left-Side Upholstery. 90-15-7
Remove and Install Right-Side Upholstery 90-15-8
Remove and Install Windshield 90-15-13
Remove and Install Front Lower Windows . . .90-15-15
Remove and Install Rear Lower Window. 90-15-15
Remove and Install Rear Upper Window. 90-15-16
Remove and Install Side Windows 90-15-17
Remove and Install Cab Doors 90-15-18
Remove and Install Cab Outer Roof 90-15-21
Remove and Install A/C Housing Inner Roof. 90-15-22
Remove Cab. 90-15-33
Install Cab. 90-15-50

Group 16—Isolated Open Operator Station Components
Other Material 90-16-1
Specifications 90-16-1
Remove Isolated Open Operator Station. 90-16-1
Install Isolated Open Operator Station. 90-16-10

Group 20—Air Conditioning System
Essential Tools 90-20-1
Service Equipment and Tools 90-20-3
Other Material 90-20-4
Specifications 90-20-5
Service Parts Kits 90-20-5
Recover/Recycle Air Conditioning Refrigerant. 90-20-6
Replace Air Conditioning Receiver/Dryer. 90-20-7
Remove, Inspect, and Install Air Conditioning Condenser. 90-20-8
Remove, Inspect, and Install Air Conditioning Compressor 90-20-11
Test Volumetric Efficiency of Compressor 90-20-13
Test Compressor Shaft Seal Leakage. 90-20-15
Disassemble and Assemble Compressor Clutch 90-20-16
Disassemble, Inspect, and Assemble Compressor 90-20-17
Check Compressor Clutch Hub Clearance . . .90-20-20
Inspect Compressor Manifold 90-20-21
Remove and Install Compressor Relief Valve 90-20-22

Continued on next page

Page

Remove and Install HVAC Housing Cover . . .90-20-22
Remove Blower Motors 90-20-23
Remove Evaporator/Heater Core 90-20-24
Leak Test Evaporator/Heater Core 90-20-25
Install Evaporator/Heater Core 90-20-26
Service Expansion Valve. 90-20-27
Expansion Valve Bench Test. 90-20-28
Refrigerant Oil Information 90-20-30
Check Compressor Oil Charge 90-20-31
Determine Correct Refrigerant Oil Charge. . . .90-20-32
Add Refrigerant Oil to System. 90-20-33
System Information 90-20-34
Flush Air Conditioning System 90-20-35
Evacuate Air Conditioning System 90-20-39
Charge Air Conditioning System 90-20-40

Group 25—Heating System

Replace Heater Temperature Control Cable . . .90-25-1
Remove Heater Control Valve. 90-25-3
Leak Test Heater Control Valve 90-25-3
Install Heater Control Valve. 90-25-4

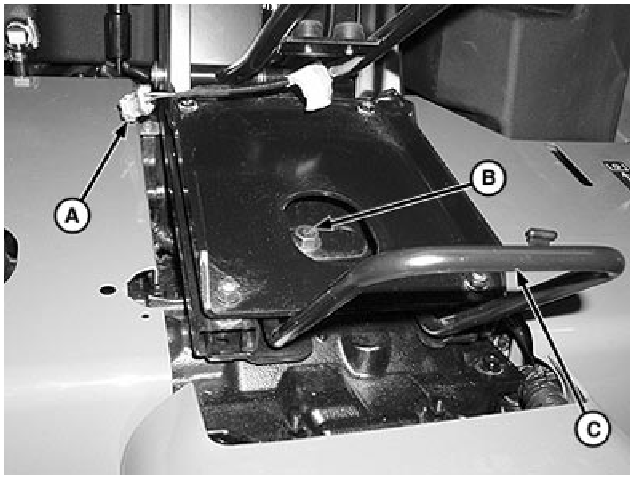
Group 05
Seat and Support

Specifications

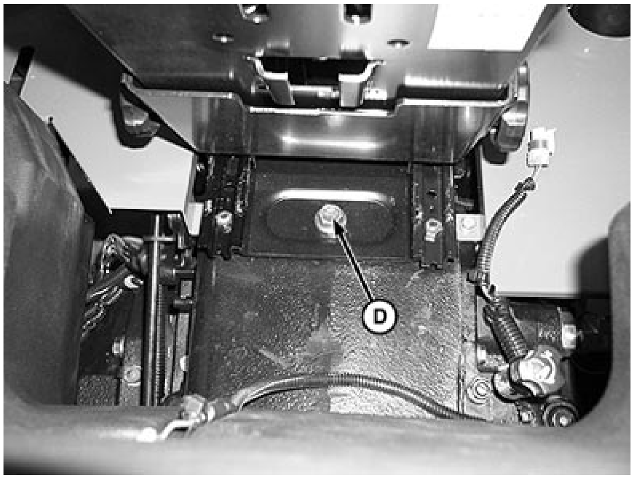
Item	Measurement	Specification
Straddle Mount Seat Support Cap Screw	Torque	125 N•m (92 lb-ft)
IOOS and Cab Seat Support Cap Screw	Torque	35 N•m (26 lb-ft)
Seat Support Cap Screw (Cab with Air Seat)	Torque	35 N•m (26 lb-ft)

JG31785,0000416 –19–18FEB05–1/1

Remove and Install Seat and Support—Straddle Mount



LV9926 –UN–10AUG04



LV9927 –UN–10AUG04

1. Position seat using adjustment bar (C) to gain access to cap screw (B) and wiring connector (A).
2. Disconnect wiring connector (A) and remove cap screw (B).
3. Using adjustment bar, slide seat forward to gain access to cap screw (D).
4. Remove cap screw (D) and remove seat assembly.
5. Install seat assembly. Tighten cap screws (B) and (D) to specification.

Specification
Straddle Mount Seat Support Cap Screw—Torque .... 125 N•m (92 lb-ft)

6. Connect wiring connector (A).

A—Wiring Connector
B—Cap Screw
C—Adjustment Bar
D—Cap Screw

OU31522,00000FF –19–10AUG04–1/1

90
05
1

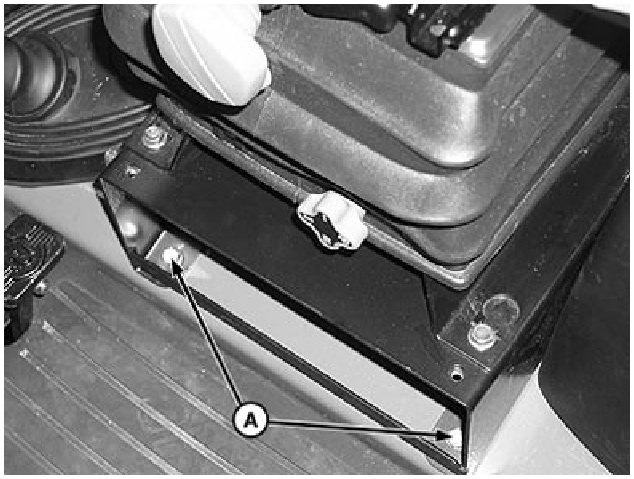
Remove and Install Seat and Support—Isolated Open Operator Station and Cab Tractors

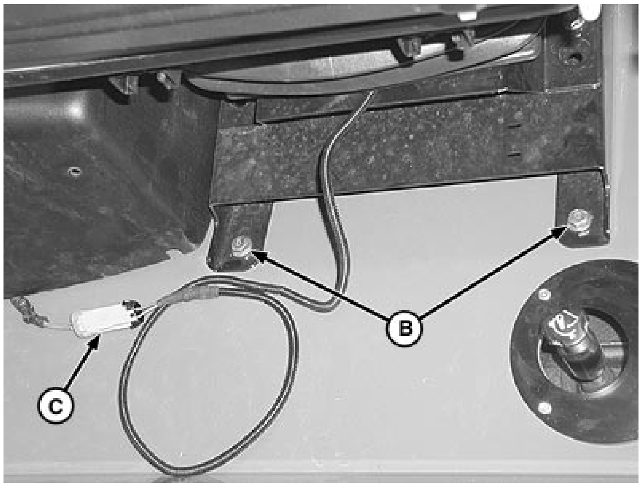
NOTE: Isolated open operator station tractor shown. Cab tractor with mechanical seat is similar.

1. Remove front support cap screws (A).
2. Disconnect harness connector (C).
3. Remove rear support cap screws (B).
4. Remove seat and support from tractor. Repair or replace as necessary.
5. Install seat and support.
6. Connect harness connector.
7. Install support cap screws (A and B).

Specification	
IOOS and Cab Seat Support Cap Screw—Torque	35 N•m (26 lb-ft)

A—Front Support Cap Screw (2 used)
B—Rear Support Cap Screw (2 used)
C—Harness Connector





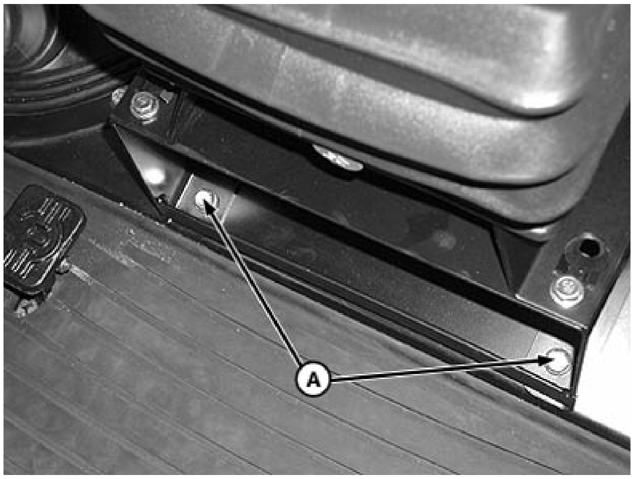
OU31522,0000100 –19–10AUG04–1/1

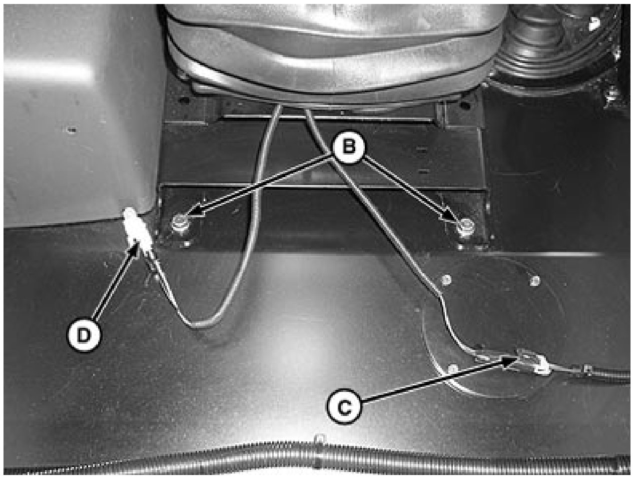
Remove and Install Seat and Support—Cab Tractors With Air Seat

1. Remove front support cap screws (A).
2. Disconnect harness connectors (C and D).
3. Remove rear support cap screws (B).
4. Remove seat and support from tractor. Repair or replace as necessary.
5. Install seat and support.
6. Connect harness connectors (C and D).
7. Install support cap screws (A and B).

Specification	
Seat Support Cap Screw (Cab with Air Seat)—Torque	35 N•m (26 lb-ft)

A—Front Support Cap Screw (2 used)
B—Rear Support Cap Screw (2 used)
C—Harness Connector
D—Harness Connector



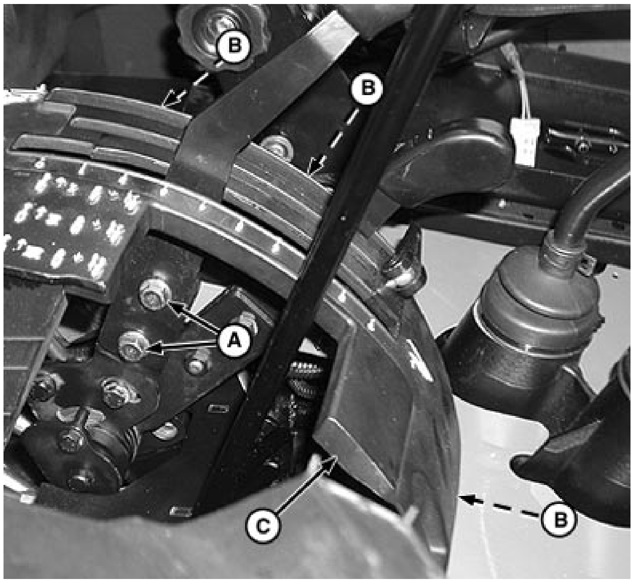


OU31522,00000FE –19–10AUG04–1/1

Remove and Install Right-Side Control Console—Straddle Mount

1. Remove right-side fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)
2. Remove cap screws (A) and rock shaft control levers.
3. Remove screws (B) and console (C).

A—Cap Screw (4 used)
B—Screw (3 used)
C—Console

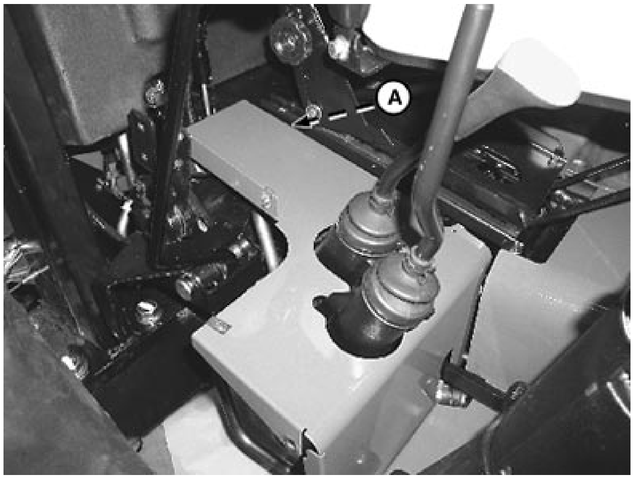


LV11375 –UN–22OCT04

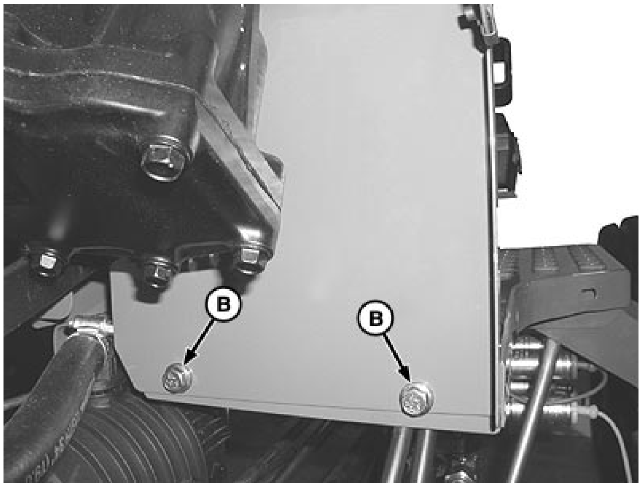
JG31785,0000120 –19–21OCT04–1/4

4. Remove cap screws (A and B). Remove panel.
5. Make repairs as necessary.

A—Cap Screw
B—Cap Screw (2 used)



LV10173 –UN–27OCT04



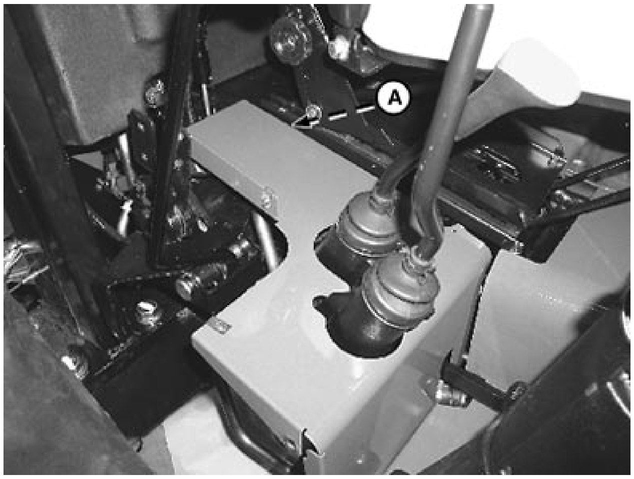
LV10174 –UN–30AUG04

Continued on next page

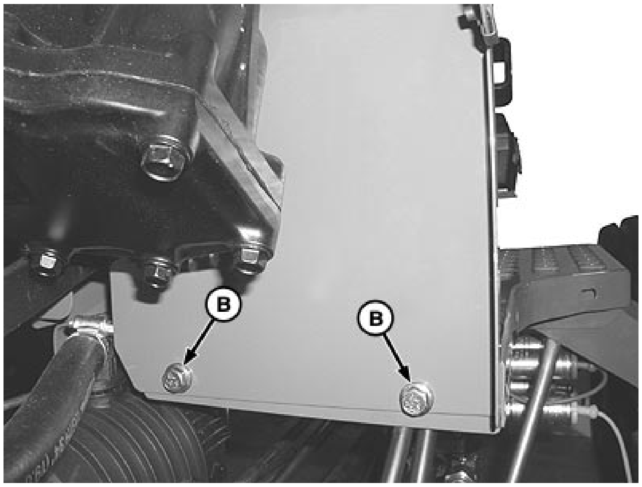
JG31785,0000120 –19–21OCT04–2/4

6. Install panel and cap screws (A and B).

A—Cap Screw
B—Cap Screw (2 used)



LV10173 –UN–27OCT04



LV10174 –UN–30AUG04

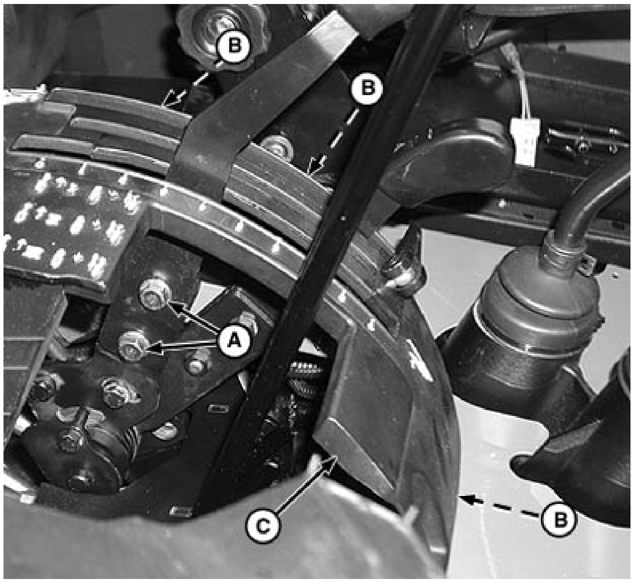
JG31785,0000120 –19–21OCT04–3/4

7. Install console (C) and screws (B).

8. Install rock shaft control levers and cap screws (A).

9. Install right-side fender. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.

A—Cap Screw (4 used)
B—Screw (3 used)
C—Console



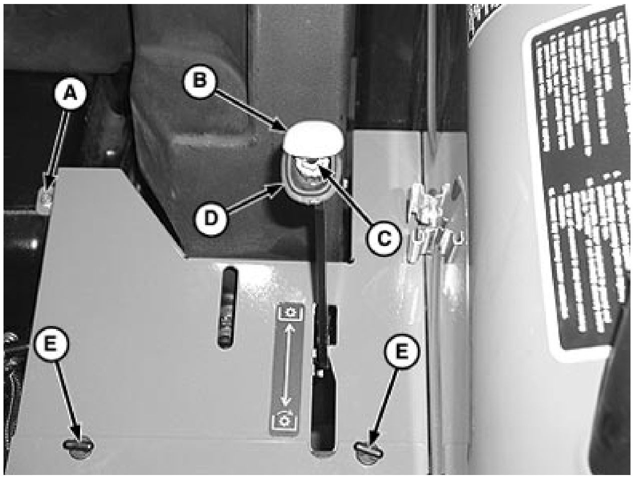
LV11375 –UN–22OCT04

JG31785,0000120 –19–21OCT04–4/4

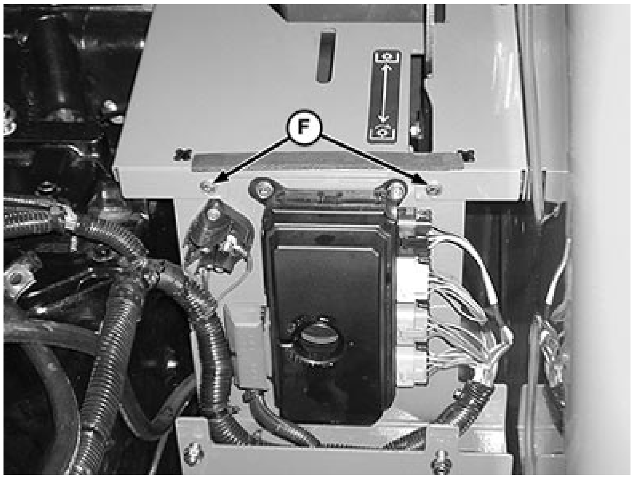
Remove and Install Left-Side Control Console—Straddle Mount

NOTE: Remove 540/540E PTO shifter knob if equipped. Seat removed for illustration purposes.

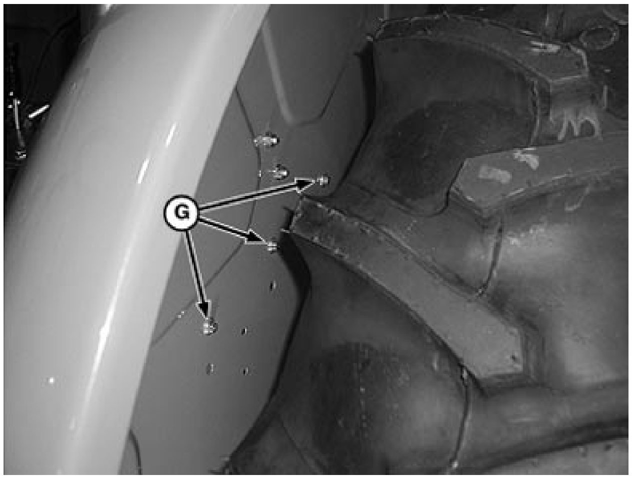
1. Remove insert (B), nut (C) and knob (D).
2. Remove cap screw (A).
3. Turn quick fasteners (E) and remove VEC cover.
4. Remove cap screws (F).
5. Remove cap screws (G) and left-side control panel.
6. Make repairs as necessary.
7. Install left-side control panel and cap screws (G).
8. Install cap screws (F).
9. Install VEC cover and secure with quick fasteners (E).
10. Install cap screw (A).
11. Install knob (D), nut (C) and insert (B).



LV11283 –UN–20OCT04



LV11285 –UN–20OCT04



LV11284 –UN–20OCT04

A—Cap Screw
B—Insert
C—Nut
D—Knob
E—VEC Cover Quick Fastener (2 used)
F—Cap Screw (2 used)
G—Cap Screw (3 used)

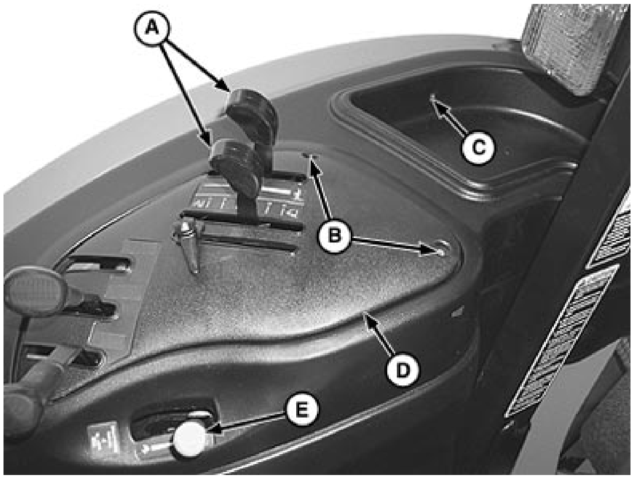
90
06
3

JG31785,00000F0 –19–15OCT04–1/1

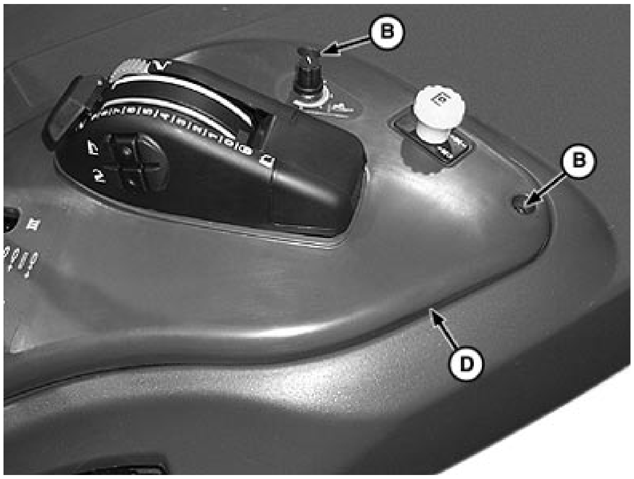
Remove and Install Right-Side Control Console—Isolated Open Operator Station Tractors

1. Remove rockshaft control lever knobs (A), if equipped.
2. Remove throttle control lever knob (E).
3. Remove two screws (B) and cover panel (D).
4. Disconnect electrical connectors (F—H), if equipped.
5. Remove rear screw (C).

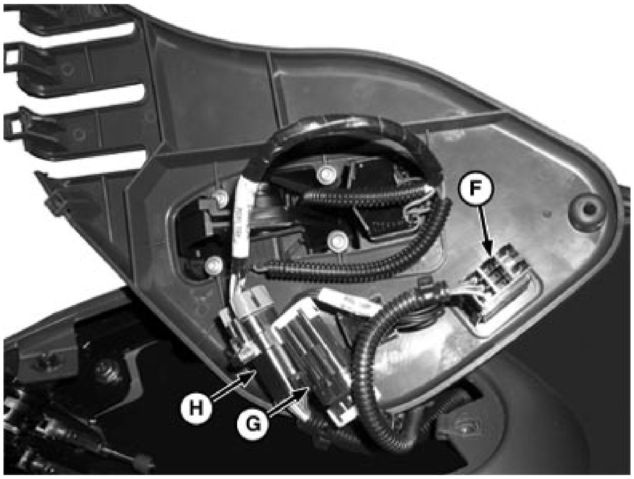
A—Rockshaft Control Lever Knob (2 used)
B—Screw (2 used)
C—Rear Screw
D—Cover Panel
E—Throttle Control Lever Knob
F—Electrical Connector
G—Electrical Connector
H—Electrical Connector



Right Console—Standard Hitch



Right Console—EH Hitch With EH PTO



EH Connectors

Continued on next page

6. Remove screws (A) and bottom screw (B).

7. Disconnect light connector (C).

8. Remove cap screw (D) and right fender light.

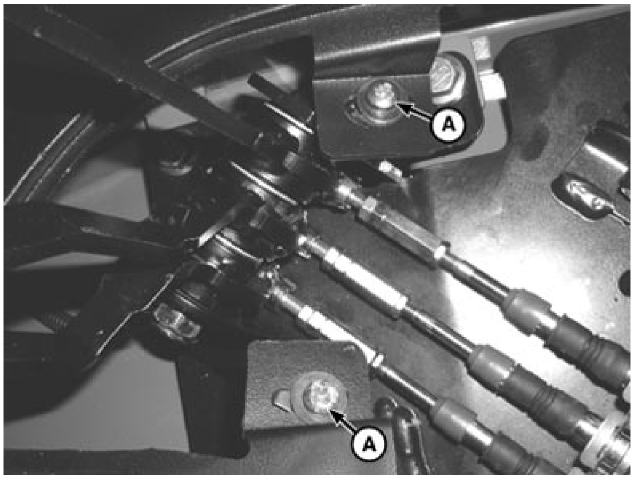
9. Remove right-side control console. Repair or replace as necessary.

10. Install right-side control console and install fender light using cap screw (D).

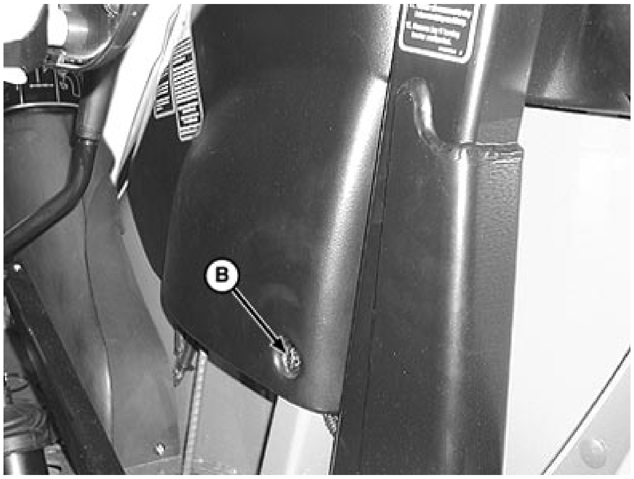
11. Connect light connector (C).

12. Install screws (A) and bottom screw (B).

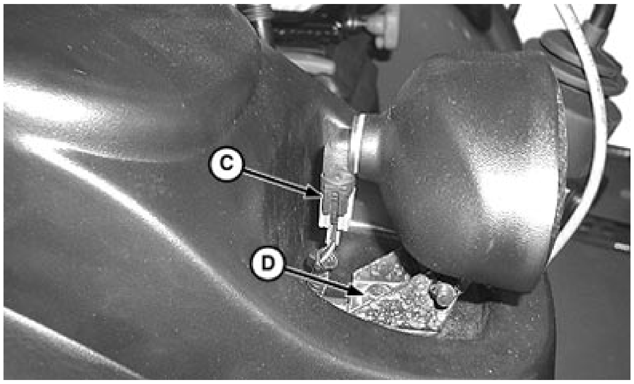
A—Screw (2 used)
B—Screw
C—Right Front Fender Light Connector
D—Cap Screw



LV10733 –UN–04OCT04



LV11439 –UN–29OCT04



LV11440 –UN–29OCT04

Continued on next page

OUO1082,0000308 –19–28OCT04–2/3

13. Install rear screw (C).

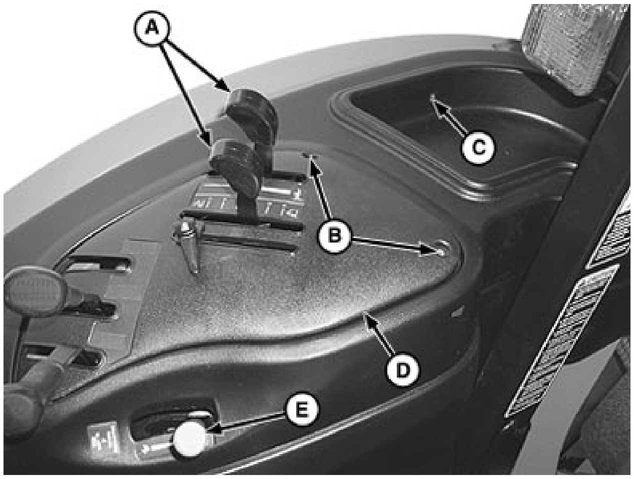
14. Connect electrical connectors (F—H), if equipped.

15. Install cover panel (D) and two screws (B).

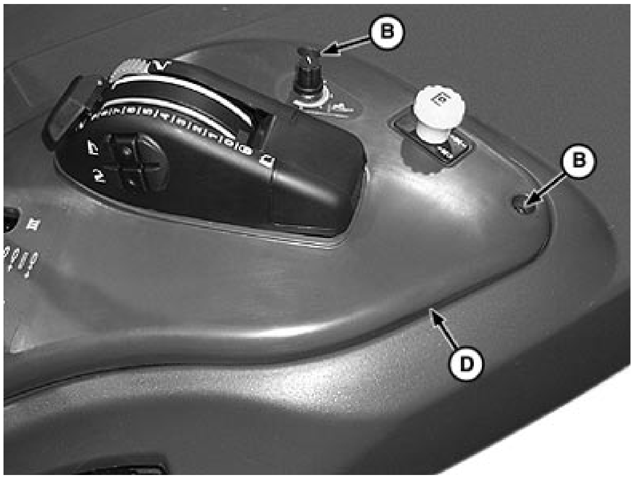
16. Install throttle control lever knob (E).

17. Install rockshaft control lever knobs (A), if equipped.

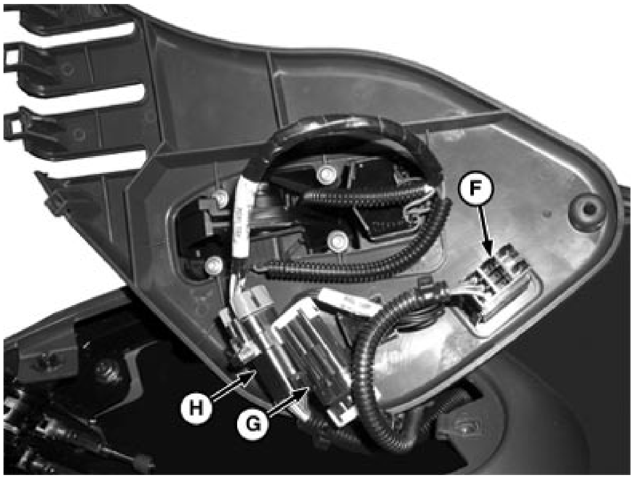
A—Rockshaft Control Lever Knob (2 used)
B—Screw (2 used)
C—Rear Screw
D—Cover Panel
E—Throttle Control Lever Knob
F—Electrical Connector
G—Electrical Connector
H—Electrical Connector


A
C
B
D
E
LV11436 –UN–29OCT04

Right Console—Standard Hitch


B
B
D
LV11437 –UN–29OCT04

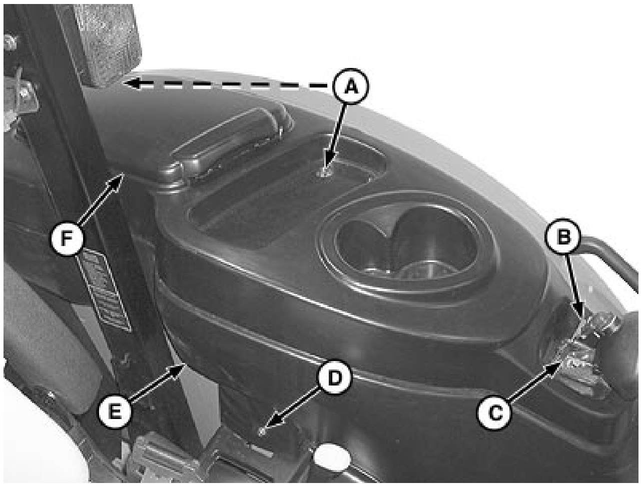
Right Console—EH Hitch With EH PTO

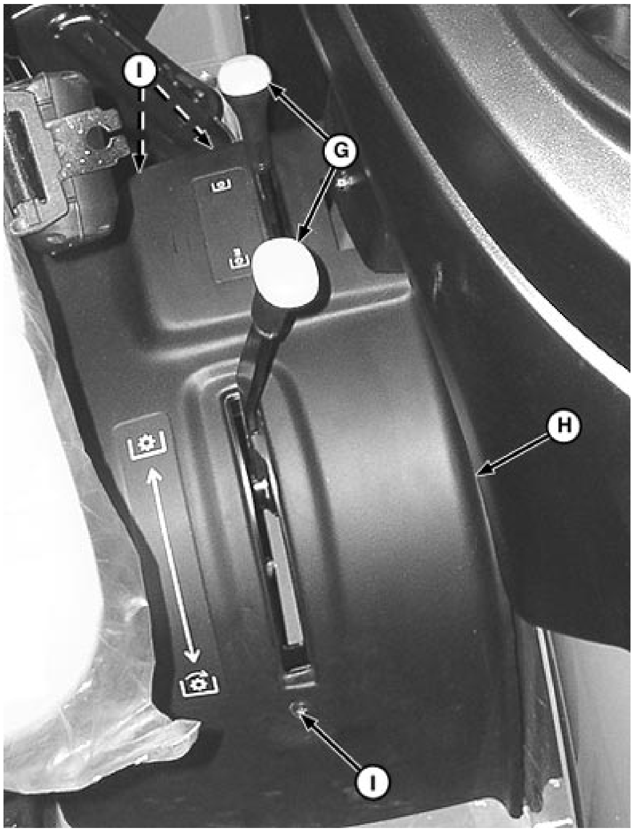

F
H
G
LV11438 –UN–29OCT04

EH Connectors

OUO1082,0000308 –19–28OCT04–3/3

Remove and Install Left-Side Control Console—Isolated Open Operator Station Tractors





1. Remove cover (F).
2. Remove left fender console upper screws (A).
3. Disconnect left fender light connector (B).
4. Remove cap screw (C) and left fender light.
5. Remove cap screw (D).
6. Remove PTO and 540/540E lever knobs (G), if equipped.
7. Remove screws (I).
8. Remove left fender console (E) and left-side control console (H). Repair or replace as necessary.
9. Install left-side control console (H) and left fender console (E).
10. Install screws (I).
11. Install PTO and 540/540E lever knobs (G), if equipped.
12. Install screws (A and D).
13. Install left fender light and cap screw (C).
14. Connect fender light connector (B).
15. Install cover (F).

A—Screw (2 used)
B—Light Connector
C—Cap Screw
D—Cap Screw
E—Left Fender Console
F—Cover
G—Lever Knob
H—Left-Side Control Console
I—Screw (3 used)

Remove and Install Right-Side Control Console—Cab Tractors

1. Remove rockshaft control lever handles (A), if equipped.

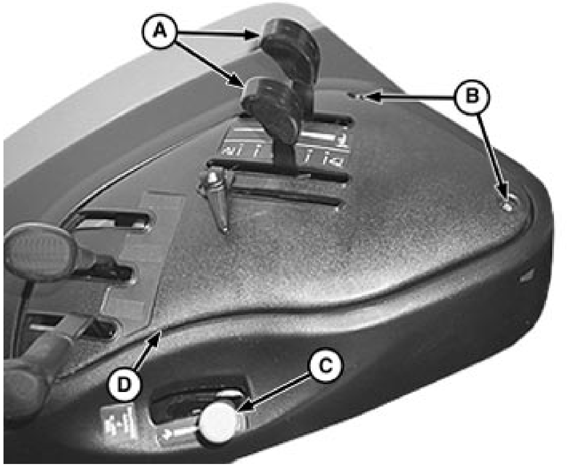
2. Remove throttle lever handle (C).

3. Remove cover mounting screws (B).

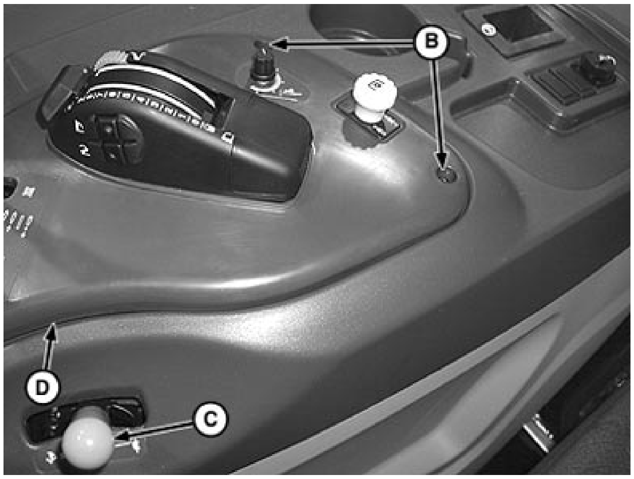
4. Remove cover (D).

5. Disconnect wire connectors (E—G), if equipped.

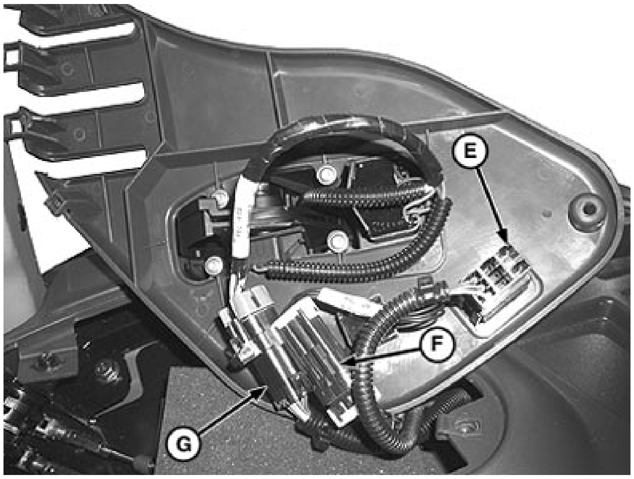
A—Hitch Control Lever Handle (2 used)
B—Screw (2 used)
C—Throttle Lever Handle
D—Cover
E—Connector
F—Connector
G—Connector


A
B
D
C
LV11469 –UN–03NOV04

Standard Hitch Controls


B
D
C
LV11470 –UN–03NOV04

EH Hitch Controls

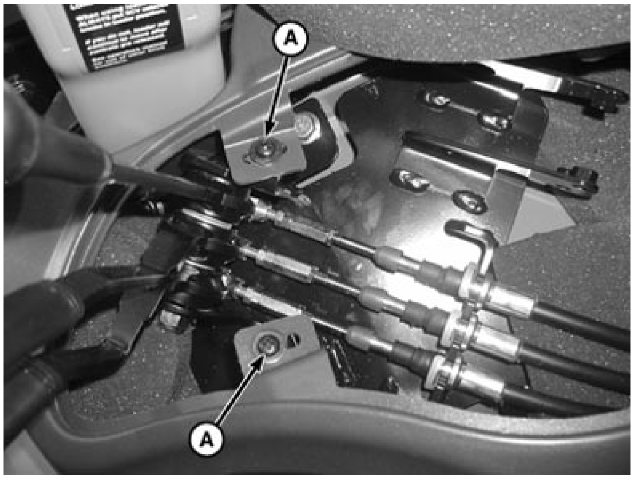

E
F
G
LV11471 –UN–03NOV04

Continued on next page OUO1082,000030B –19–01NOV04–1/6

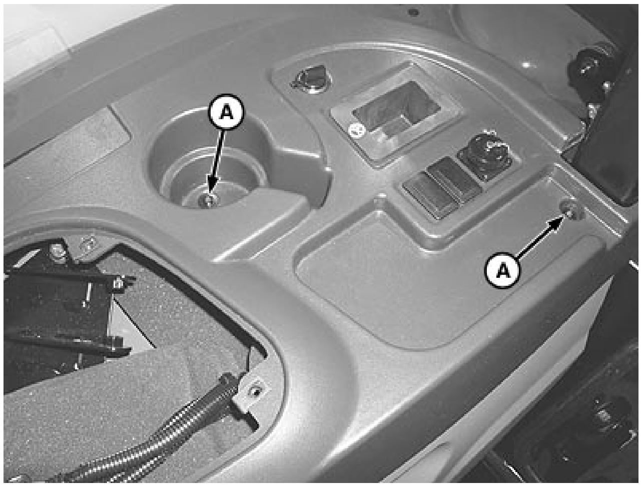
6. Remove console screws (A).

7. Raise back end of console (C) and pivot end around cab post (B). Lift front of console over levers.

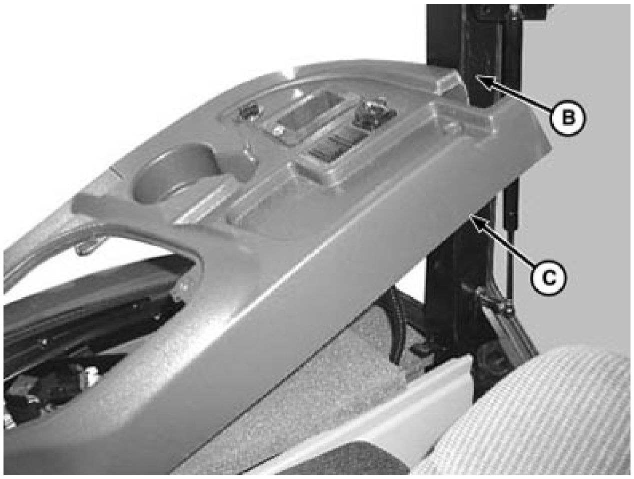
A—Console Mounting Screw (4 used)
B—Cab Post
C—Console



LV11750 –UN–19NOV04



LV10058 –UN–24AUG04



LV12025 –UN–06JAN05

Continued on next page

OUO1082,000030B –19–01NOV04–2/6

NOTE: Tag or label wires before disconnecting to aid during installation.

8. Disconnect lighter harness (A).

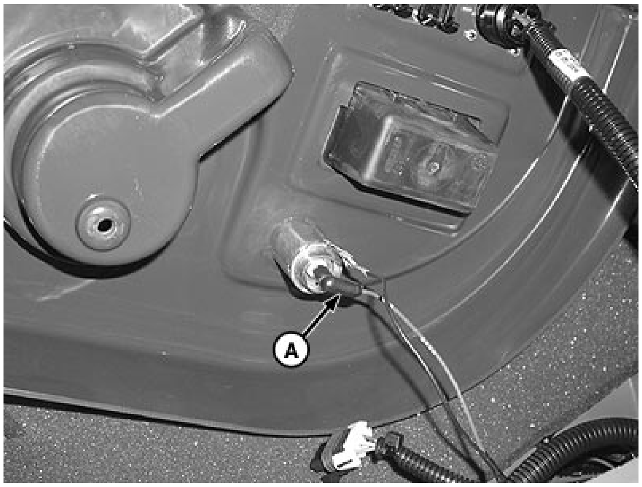
9. Remove right-side upholstery panel.

10. Disconnect power outlet harness (B) at junction block (C).

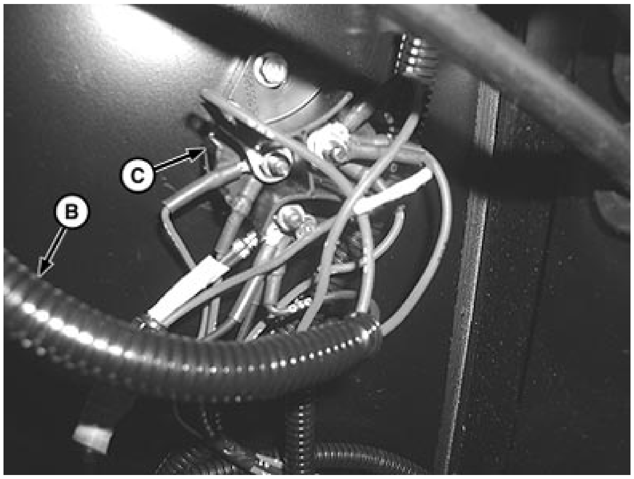
11. Remove console.

12. Make repairs as necessary.

A—Lighter Harness
B—Power Outlet Harness
C—Junction Block



LV10084 –UN–25AUG04



LV11493 –UN–04NOV04

Continued on next page

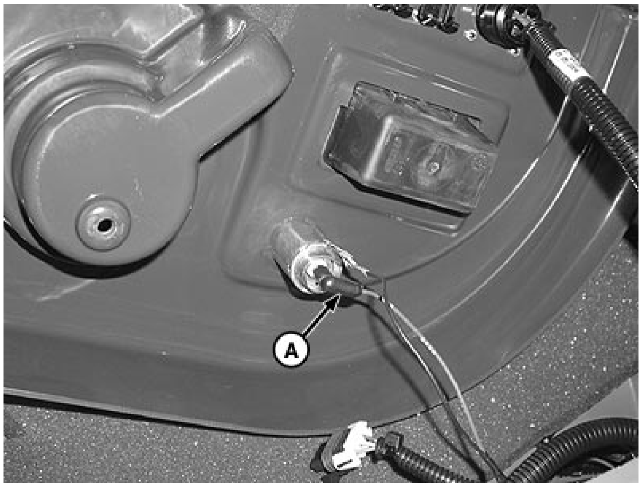
OUO1082,000030B –19–01NOV04–3/6

13. Connect power outlet harness (B) at junction block (C).

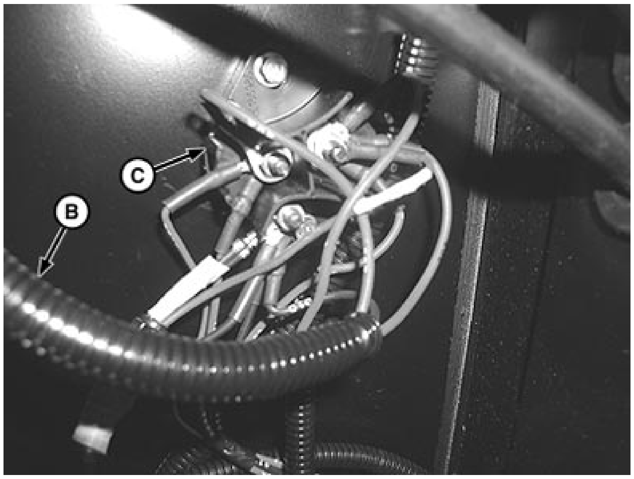
14. Install right-side upholstery panel.

15. Connect lighter harness (A).

A—Lighter Harness
B—Power Outlet Harness
C—Junction Block



LV10084 –UN–25AUG04



LV11493 –UN–04NOV04

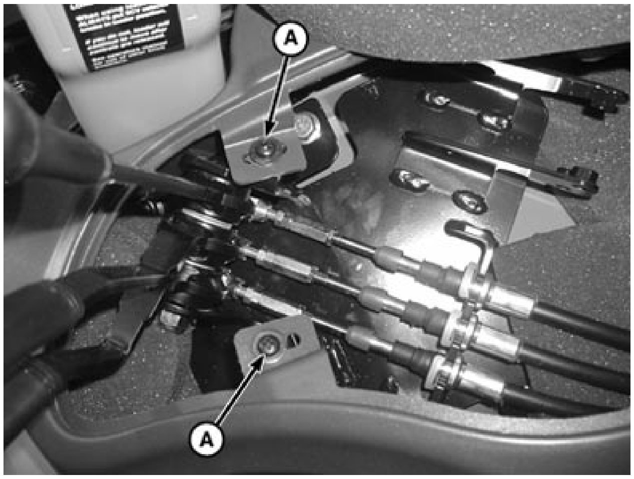
Continued on next page

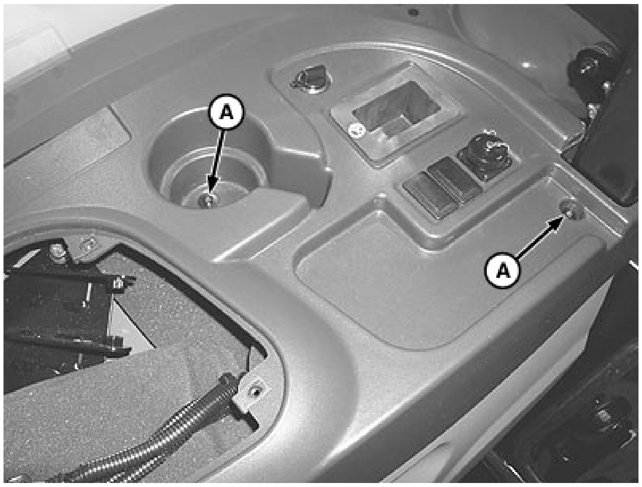
OUO1082,000030B –19–01NOV04–4/6

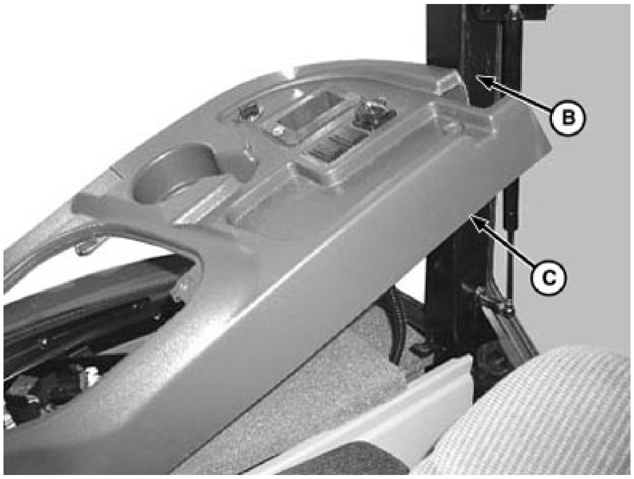
16. Lift front of console over levers. Raise back end of console (C) and pivot end around cab post (B).

17. Install console mounting screws (A).

A—Console Mounting Screw (4 used)
B—Cab Post
C—Console


A
A
LV11750 –UN–19NOV04


A
A
LV10058 –UN–24AUG04


B
C
LV12025 –UN–06JAN05

Continued on next page OUO1082,000030B –19–01NOV04–5/6

18. Connect wire connectors (E—G), if equipped.

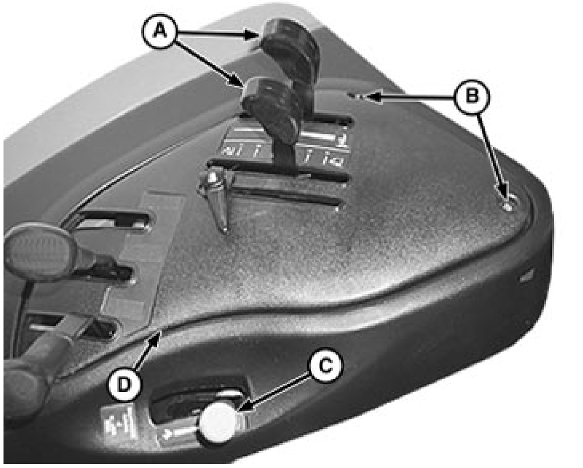
19. Install cover (D).

20. Install cover mounting screws (B).

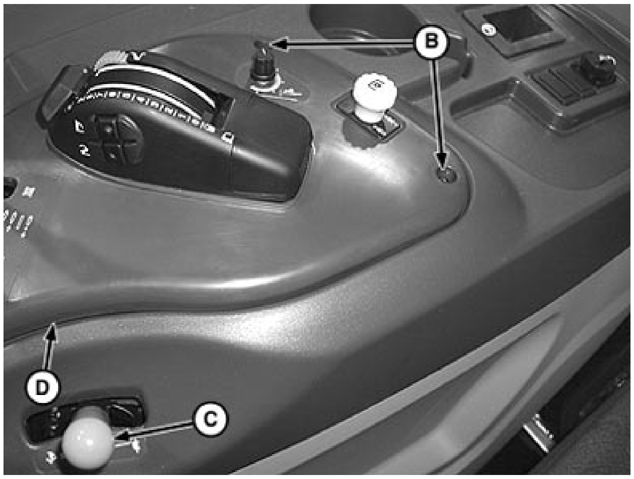
21. Install throttle lever handle (C).

22. Install rockshaft control lever handles (A), if equipped.

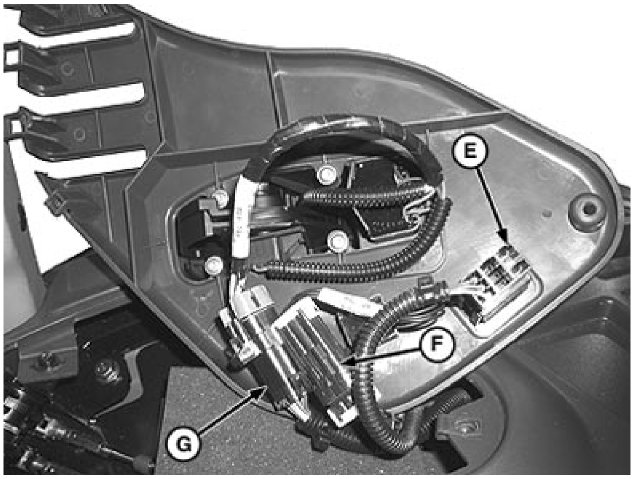
A—Hitch Control Lever Handle (2 used)
B—Screw (2 used)
C—Throttle Lever Handle
D—Cover
E—Connector
F—Connector
G—Connector


A
B
D
C
LV11469 –UN–03NOV04

Standard Hitch Controls


B
D
C
LV11470 –UN–03NOV04

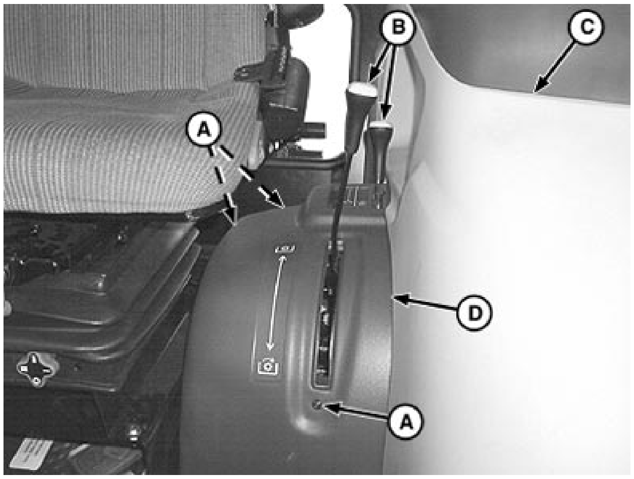
EH Hitch Controls


E
F
G
LV11471 –UN–03NOV04

OUO1082,000030B –19–01NOV04–6/6

Remove and Install Left-Side Control Console—Cab Tractors

1. Remove left-side upholstery (C). (See Remove and Install Left-Side Upholstery in Section 90, Group 15.)
2. Remove knobs (B) from control levers, if equipped.
3. Remove screws (A) and control console (D).
4. Make repairs as necessary.
5. Install control console (D) and screws (A).
6. Install control lever knobs (B), if equipped.
7. Install left-side upholstery (C). (See Remove and Install Left-Side Upholstery in Section 90, Group 15.)



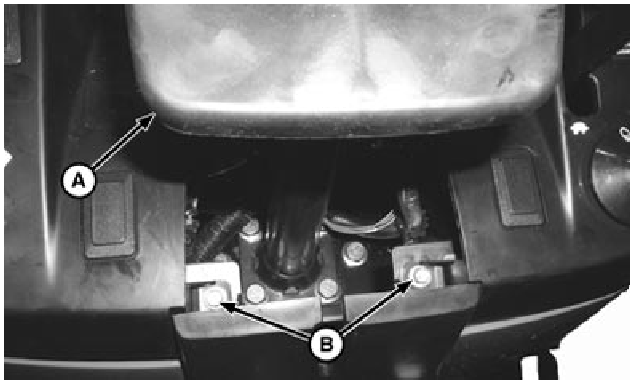
A—Screw (3 used)
B—Knob
C—Upholstery
D—Control Console

OUO1082,000030C –19–03NOV04–1/1

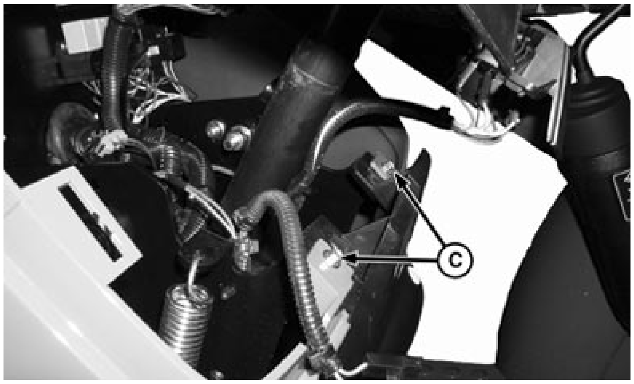
Remove and Install Cowl Cover

1. Lift steering column boot (A).
2. Remove cap screws (B) from instrument panel.
3. Pull top edge of instrument panel toward seat to disengage retaining clips.
4. Remove cap screws (C) retaining cowl cover to steering column support.
5. Remove cap screws at top center of cowl cover, if equipped.
6. Straddle Mount and Isolated Open Operator Station: Remove cap screws (D) and hood brackets (E) from control supports on both sides of cowl cover. Disengage locking tabs (F).
7. Cab tractors: Pull outward on front of cowl cover sides to disengage clips from control supports.
8. Disengage cowl cover from key switch housing by pulling up, then out, to release locking tabs (G).
9. Remove cowl cover
10. Make repairs as necessary.

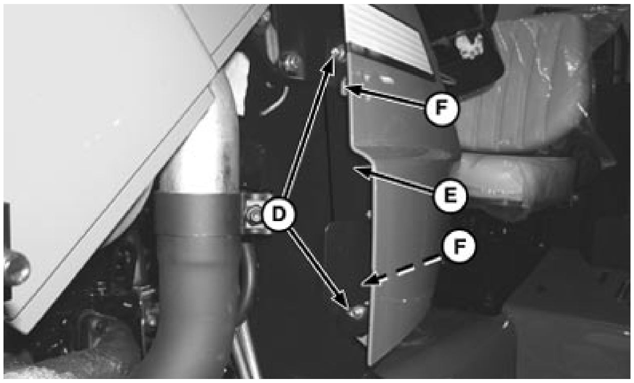
A—Boot
B—Cap Screws
C—Cap Screws
D—Cap Screws
E—Hood Bracket
F—Locking Tabs
G—Locking Tabs



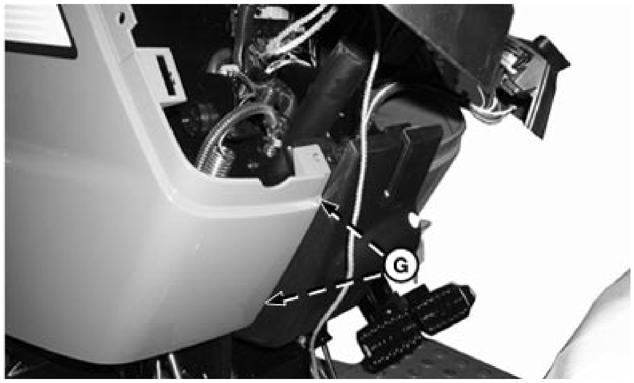
LV10968 –UN–11OCT04



LV10969 –UN–11OCT04



LV10970 –UN–11OCT04



LV10971 –UN–11OCT04

Continued on next page

OUO1073,0001D94 –19–04OCT04–1/2

11. Position cowl cover locking tabs (G) into slots of key switch housing.

12. Cab tractors: Push inward on front of cowl cover sides to engage clip to control support.

13. Straddle Mount and Isolated Open Operator Station: Engage locking tabs (F), install hood brackets (E) and two cap screws (D) to both sides.

14. Install cap screw at top center of cowl cover, if equipped.

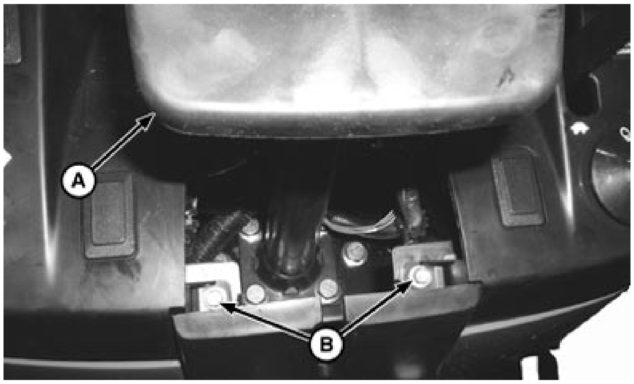
15. Install cap screws attaching cowl cover to steering column supports.

16. Install instrument panel ensuring retaining clips are properly engaged.

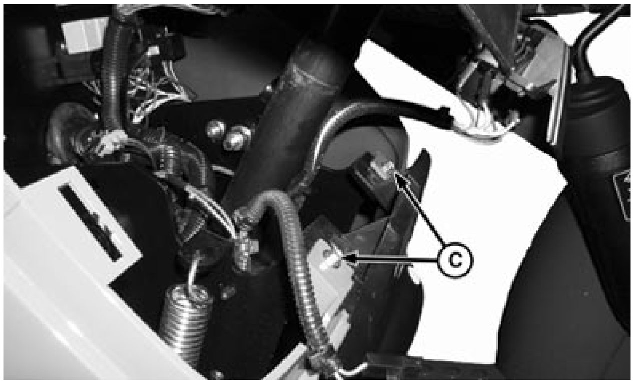
17. Install cap screws (B) attaching instrument panel.

18. Install steering column boot (A).

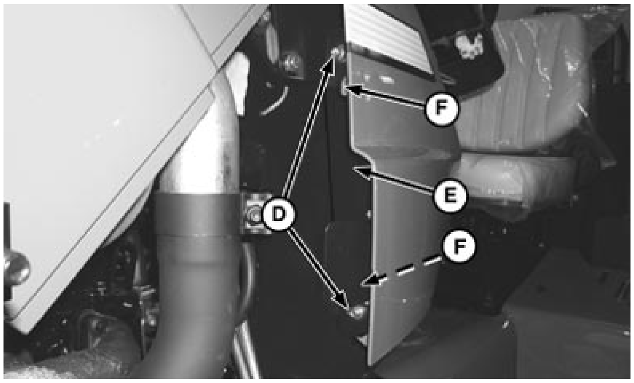
A—Boot
B—Cap Screws
C—Cap Screws
D—Cap Screws
E—Hood Bracket
F—Locking Tabs
G—Locking Tabs



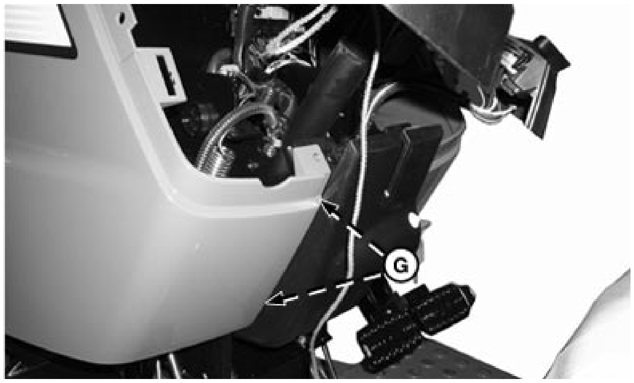
LV10968 –UN–11OCT04



LV10969 –UN–11OCT04



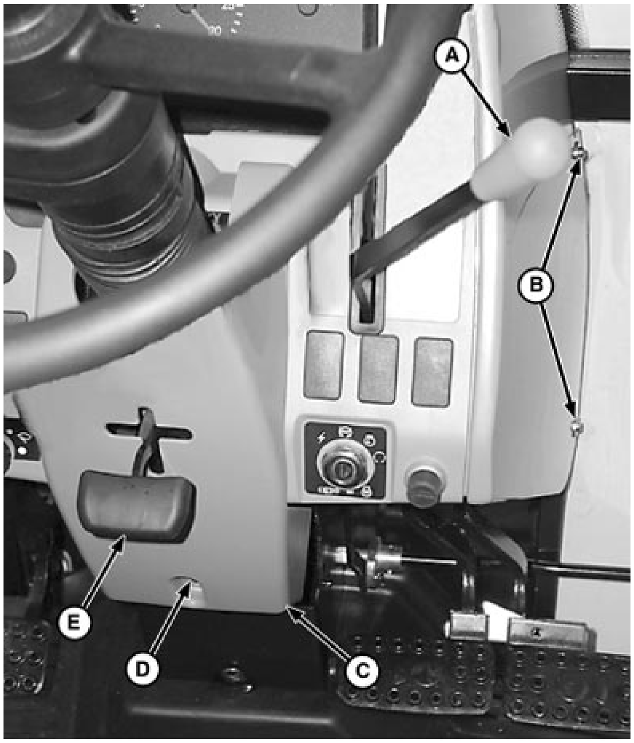
LV10970 –UN–11OCT04



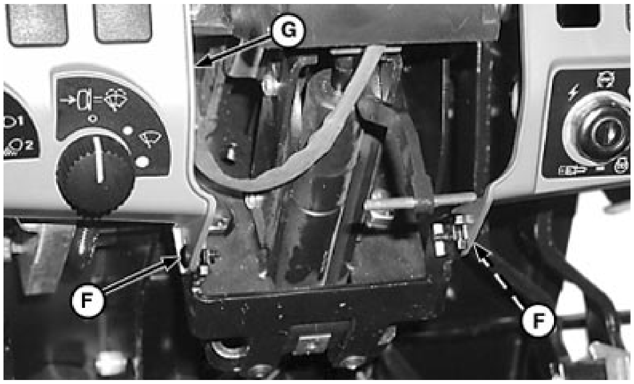
LV10971 –UN–11OCT04

Remove and Install Center Control Console—5603

1. Disconnect Battery, negative (—) cabel first.
2. Remove knobs (A and E).
3. Remove two screws (B) on both sides of center control console.
4. Remove screw (D), center panel (C) and two screws (F)
5. Pull center control console away from front window and disconnect all wiring connector on back of console and instrument cluster.
6. Remove center control console (G). Make repairs as necessary.
7. Install center control console in reverse order of removal.



LV12930 –UN–14DEC06



LV12931 –UN–14DEC06

A—Throttle Lever Knob
B—Screw (4 used)
C—Center Panel
D—Screw (1 used)
E—Tilt Lever Knob
F—Screw (2 used)
G—Center Control Console

OUO1023,0002A78 –19–12DEC06–1/1

Specifications

Item	Measurement	Specification
ROLL-GARD™ Cap Screw	Torque	500 N•m (369 lb-ft)
Rear Wheel-to-Axle Cap Screw M20	Torque	600 N•m (442 lb-ft)

ROLL-GARD is a trademark of Deere & Company

OU31522,0000102 –19–26AUG04–1/1

Remove and Install ROLL-GARD™—Straddle Mount

NOTE: Rear wheel is removed only for illustration purposes.

5525 tractor shown, other models are similar.

1. Remove fenders. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)

CAUTION: Approximate weight of ROLL-GARD crossbar is 20 kg (45 lb).

2. Attach a suitable lifting device to crossbar (C).

3. Remove locking pin (A).

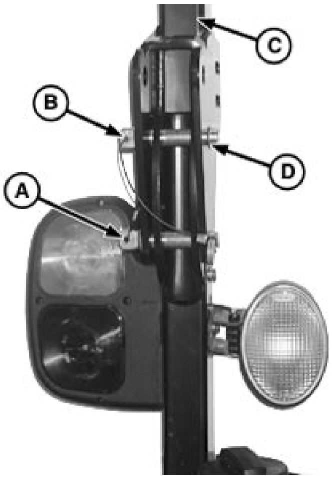
4. Remove snap ring (D).

NOTE: Pivot pin (B) is press fit in outside flange of post.

5. Remove pivot pin (B) using a brass drift and hammer.

6. Repeat steps 3, 4, and 5 for opposite side of ROLL-GARD.

7. Remove crossbar (C).



Left Side

A—Locking Pin
B—Pivot Pin
C—Crossbar
D—Snap Ring

ROLL-GARD is a trademark of Deere & Company

Continued on next page

OU31522,00000FB –19–04AUG04–1/3

8. Remove screw (B) and nut (C) to loosen fuel tank retaining strap (A).

9. Disconnect light harness at bottom of post (D).

10. Remove four cap screws (E) to remove post (D).

11. Repeat steps above to remove left-side post.

NOTE: Remove lights if ROLL-GARD repair or replacement is necessary.

12. Inspect all parts for damage. Replace as necessary.

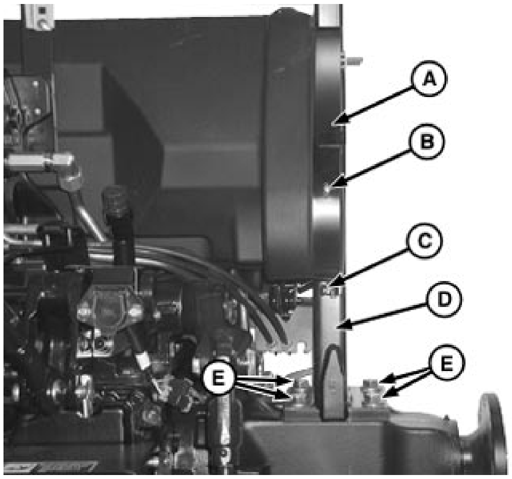
13. Install post (D) and cap screws (E). Tighten cap screws to specification.

Specification	
ROLL-GARD Cap Screw—Torque	500 N•m (369 lb-ft)

14. Install fuel tank retaining strap and secure with screw (B) and nut (C).

15. Repeat steps 12 and 13 to install left-side post.

16. Install fenders. (See Remove and Install Fenders—Straddle Mount in Section 80, Group 20.)



LV9888 –UN–05AUG04

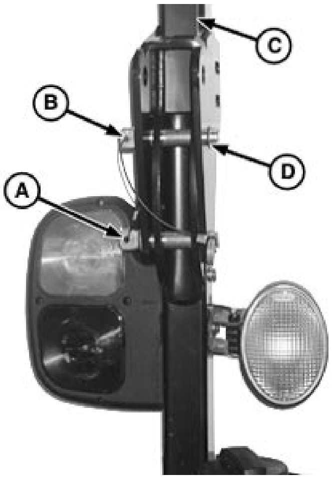
A—Fuel Tank Retaining Strap
B—Screw
C—Nut
D—Post
E—Cap Screw (4 used)

OU31522,00000FB –19–04AUG04–2/3

17. Install crossbar (C).

18. Install parts (A, B, and D).

A—Locking Pin
B—Pivot Pin
C—Crossbar
D—Snap Ring



Left Side

LV9887 –UN–05AUG04

OU31522,00000FB –19–04AUG04–3/3

Remove and Install ROLL-GARD™—Isolated Open Operator Station

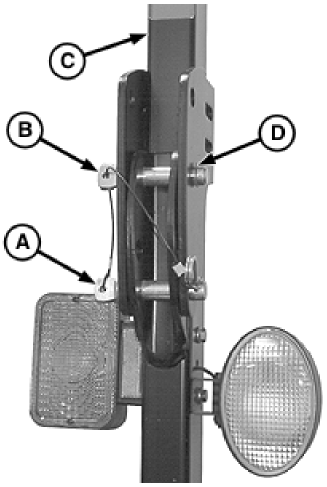
1. Remove rear wheels.

CAUTION: Approximate weight of ROLL-GARD crossbar is 20 kg (45 lb).

2. Attach a suitable lifting device to ROLL-GARD crossbar (C).
3. Remove locking pin (A).
4. Remove snap ring (D).

NOTE: Pivot pin (B) is press fit in outside flange of post.

5. Remove pivot pin (B) using a brass drift and hammer.
6. Repeat steps above for opposite side of ROLL-GARD.
7. Remove crossbar (C).



LV8659 –UN–15AUG03

Left Side

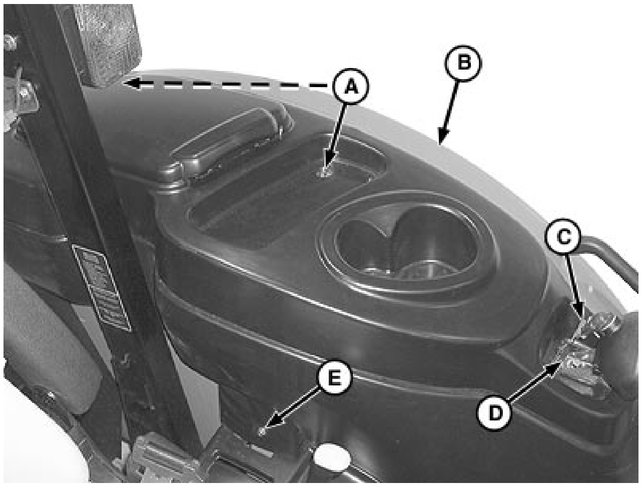
A—Locking Pin
B—Pivot Pin
C—Crossbar
D—Snap Ring

ROLL-GARD is a trademark of Deere & Company

OU31522,00000FC –19–04AUG04–1/6

8. Remove screws (A and E) from left fender console (B).
9. Disconnect electrical connector (C).
10. Remove cap screws (D) and fender light.

A—Screw (2 used)
B—Left Fender Console
C—Electrical Connector
D—Cap Screw
E—Cap Screw



LV8657 –UN–14AUG03

Continued on next page

OU31522,00000FC –19–04AUG04–2/6

11. Remove cap screw (A), carriage bolts and nuts (C), and fender frame bracket (B).

NOTE: Make sure fuel level is below fuel tank filler neck before removing.

12. Remove four cap screws and nuts (G) and fuel tank filler neck bracket (E).
13. Loosen clamp connecting fuel tank filler neck to fuel tank. Remove fuel tank filler neck (F).
14. Remove IOOS mount cap screw and nut (D).
15. Support rear of isolated open operator station.
16. Disconnect electrical connectors (I).
17. Remove four cap screws (H) and remove left ROLL-GARD post.
18. Repeat procedure to remove right ROLL-GARD post.

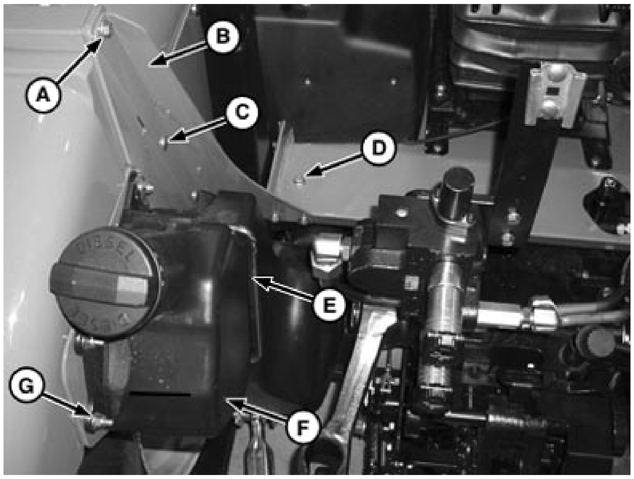
NOTE: Remove lights if ROLL-GARD repair or replacement is necessary.

19. Inspect all parts for damage. Replace as necessary.
20. Install right and left ROLL-GARD posts and cap screws (H). Tighten cap screws to specification.

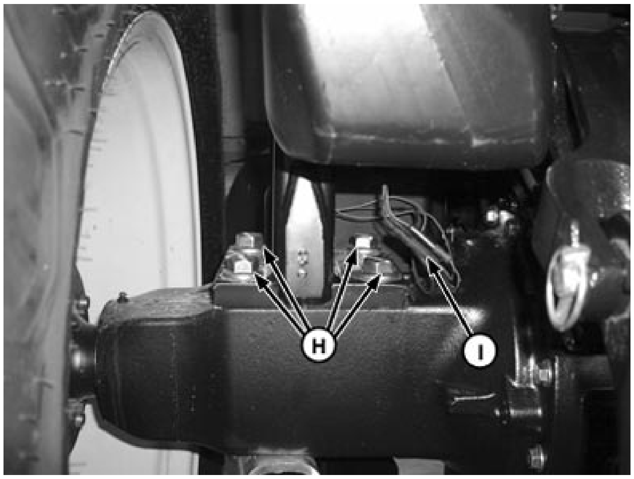
Specification

ROLL-GARD Cap Screw—Torque............................. 500 N•m (369 lb-ft)

21. Connect electrical connectors (I).



Left Side



A—Cap Screw
B—Fender Frame Bracket
C—Carriage Bolt and Nut (4 used)
D—Isolated Open Operator Station (IOOS) Mount Cap Screw and Nut
E—Fuel Tank Filler Neck Bracket
F—Fuel Tank Filler Neck
G—Cap Screw and Nut (4 used)
H—Cap Screw (4 used)
I—Electrical Connectors

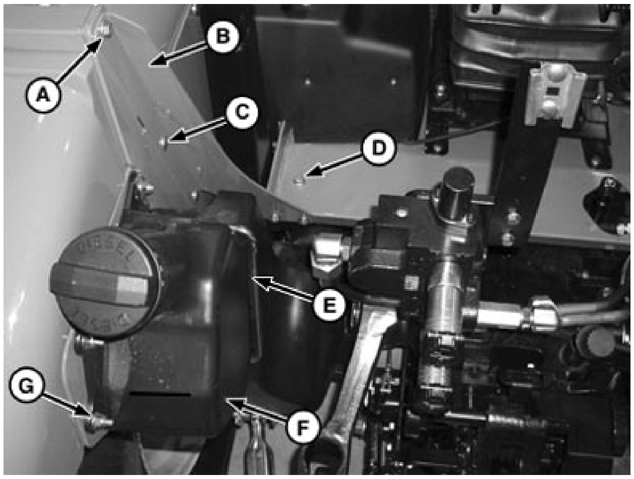
Continued on next page

22. Install IOOS mount cap screw and nut (D). Tighten securely.

23. Install fuel tank filler neck (F) and tighten clamp.

24. Install fuel tank filler neck bracket (E) and four cap screws and nuts (G).

25. Install fender frame bracket (B), carriage bolts and nuts (C), and cap screw (A).



Left Side

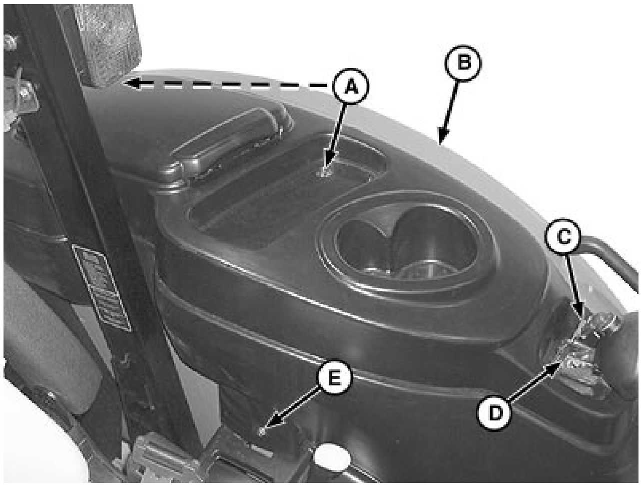
A—Cap Screw
B—Fender Frame Bracket
C—Carriage Bolt and Nut (4 used)
D—Isolated Open Operator Station (IOOS) Mount Cap Screw and Nut
E—Fuel Tank Filler Neck Bracket
F—Fuel Tank Filler Neck
G—Cap Screw and Nut (4 used)

OU31522,00000FC –19–04AUG04–4/6

26. Install fender light and cap screw (D).

27. Connect electrical connector (C).

28. Install two screws (A and E).



Left Side Console

A—Screw (2 used)
B—Left Fender Console
C—Electrical Connector
D—Cap Screw
E—Cap Screw

Continued on next page

OU31522,00000FC –19–04AUG04–5/6

29. Install crossbar (C).

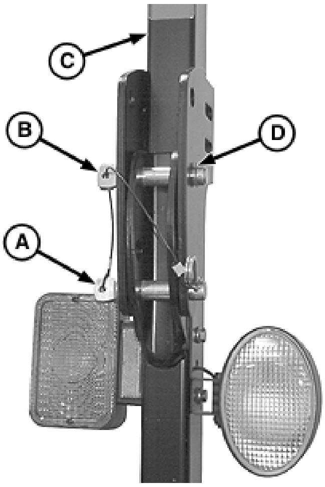
NOTE: Pivot pin (B) is press fit in outside flange of post.

30. Install pivot pin (B) using a brass drift and hammer.

31. Install snap ring (D).

32. Install locking pin (A) and secure with clip.

33. Install rear wheels. Tighten wheel cap screws to specification.



LV8659 –UN–15AUG03

Left Side

Specification

Rear Wheel-to-Axle Cap Screw	
M20—Torque	600 N•m (442 lb-ft)

A—Locking Pin
B—Pivot Pin
C—Crossbar
D—Snap Ring

OU31522,00000FC –19–04AUG04–6/6

Group 15
Cab Components

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

JG31785,00003D2 –19–08FEB05–1/2

Cab Lifting Bar JDG1580

Remove and Install Cab.

JG31785,00003D2 –19–08FEB05–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

JG31785,00003D3 –19–08FEB05–1/2

Weather Strip Installation Tool JDST-29

Used to install rear lower window seal.

JG31785,00003D3 –19–08FEB05–2/2

Other Material

Number	**Name**	**Use**
TY22101 (U.S.)	PAG Refrigeration Oil	Apply to O-ring of A/C lines.
T43513 (U.S.) TY9474 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of SCV cable before tightening retaining nut.

LOCTITE is a trademark of Loctite Corp.

JG31785,0000410 –19–17FEB05–1/1

Specifications

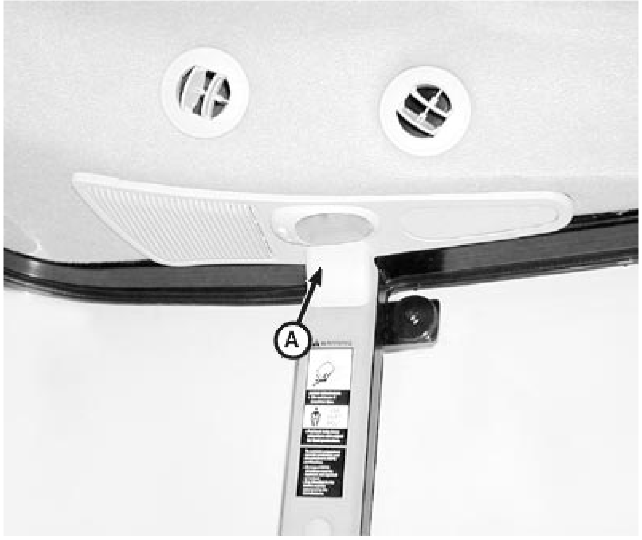
Item	Measurement	Specification
Cab Door Hinge Mounting Flange Nuts	Torque	28 N•m (20 lb-ft)
Inner Cab Roof Mounting Cap Screw	Torque	12 N•m (106 lb-in.)
Cab A/C Lines	Torque	45 N•m (33 lb-ft)
Front Cab Mount Nut	Torque	350 N•m (258 lb-ft)
Rear Cab Mount Cap Screw	Torque	220 N•m (185 ft-lb)
Cable Sleeve	Torque	16—19 N•m (144—168 lb-in.)
Cable Nut	Torque	16—19 N•m (144—168 lb-in.)
Cab A/C Lines	Torque	45 N•m (33 lb-ft)

JG31785,00003D5 –19–08FEB05–1/1

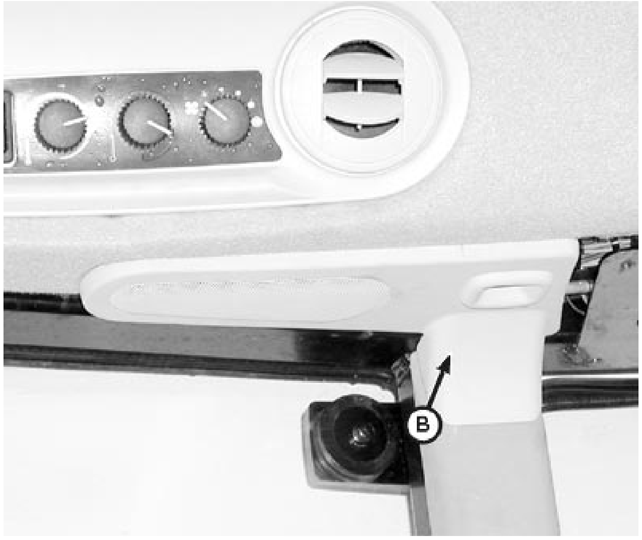
Remove, Inspect, and Install Cab Interior Recirculating Air Filters

1. Remove dome light assembly (A) and courtesy light assembly (B).
2. Remove wing nut (D) and filter retainer (E).
3. Remove filter (C) and inspect for wear and damage. Replace filter as necessary.
4. Install filter (C).
5. Install filter retainer (E) and wing nut (D).
6. Install dome light assembly (A) and courtesy light assembly (B).

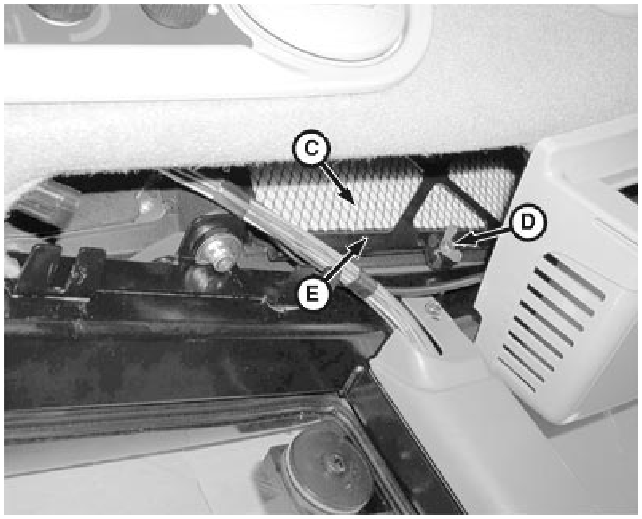
A—Left Dome Light Assembly
B—Courtesy Light Assembly
C—Filter
D—Wing Nut
E—Filter Retainer



Dome Light Assembly (Left-Side)



Courtesy Light Assembly (Right-Side)

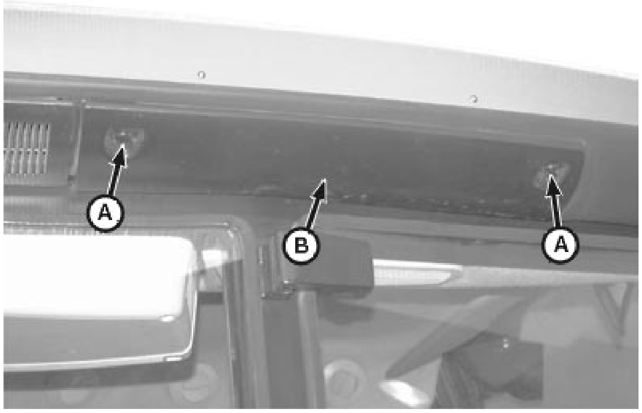


Filter Removal

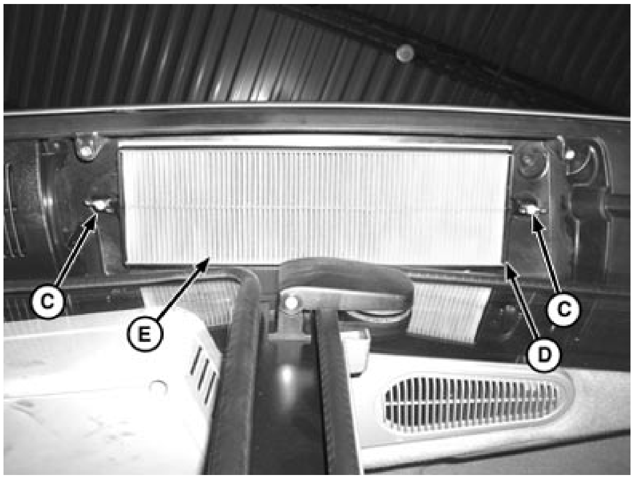
Remove, Inspect, and Install Exterior Cab Intake Air Filter

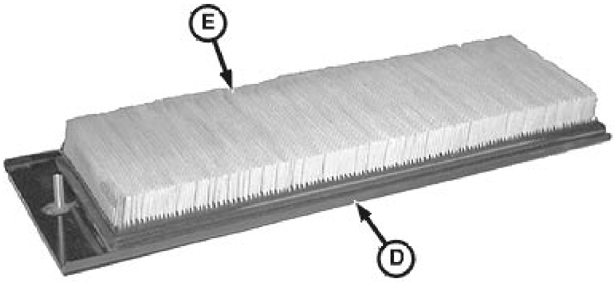
1. Loosen wing screws (A) and remove air filter panel (B) from cab.
2. Loosen wing screws (C). Remove filter bracket (D) and exterior air filter (E).
3. Inspect exterior air filter (E) and replace if necessary.
4. Install exterior air filter (E) in filter bracket (D) with rubber seal on filter towards filter bracket (D).
5. Install exterior air filter (E) and filter bracket (D) on cab. Tighten wing screws (C) securely.
6. Install air filter panel (B) on cab and tighten wing screws (A).
7. Repeat steps above for the exterior air filter on opposite side of cab.

A—Wing Screw (2 used)
B—Air Filter Panel
C—Wing Screw (2 used)
D—Filter Bracket
E—Exterior Air Filter



Right Side Air Filter Panel

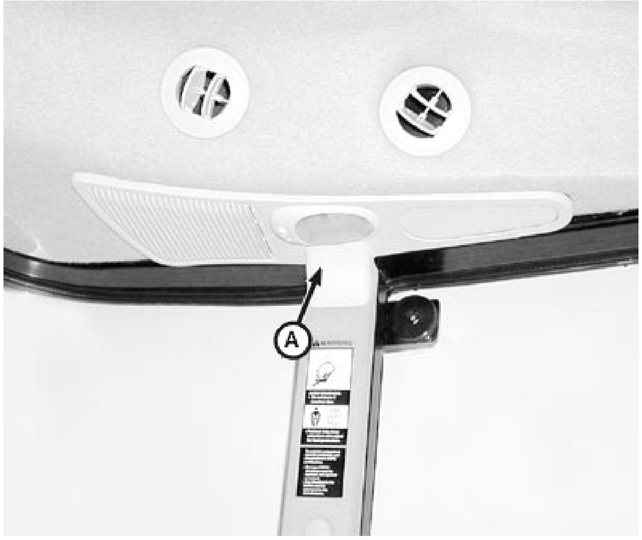




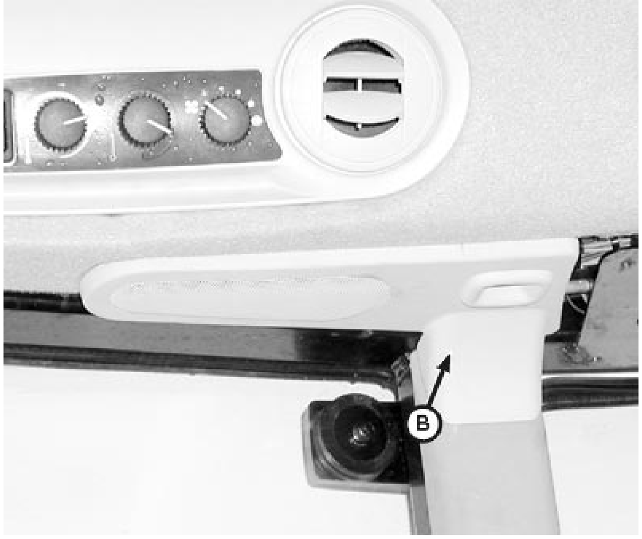
JG31785,00003C2 –19–24JAN05–1/1

Remove and Install Headliner

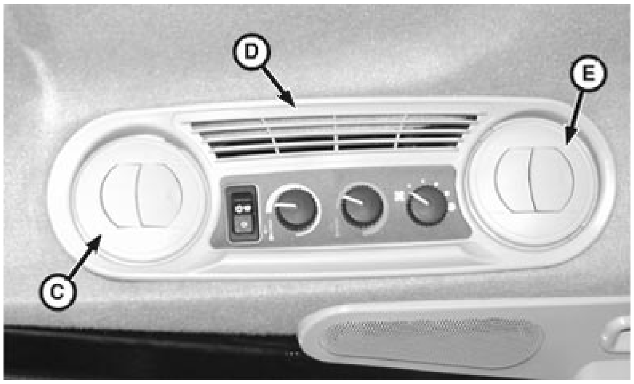
1. Remove radio panel and radio from tractor, if equipped.
2. Remove sun visor with mounting bracket and mirror with mounting bracket from tractor.
3. Remove dome light assembly (A) from tractor by pulling down on outer part of assembly and disconnecting dome light connector.
4. Remove console light assembly (B) from tractor.
5. Pull vent covers and retaining rings (C and E) from cab control console (D). Remove three mounting screws located behind vent covers and pull cab control console from headliner. Do not remove cab control console from tractor.
6. Starting with right front corner of headliner and working to the left, pull headliner in and downward from cab roof.
7. Remove headliner from tractor. Repair or replace headliner as necessary.



LV6812 –UN–03MAY01



LV6813 –UN–03MAY01



LV6814 –UN–04JUN01

A—Dome Light Assembly
B—Console Light Assembly
C—Vent Cover and Retaining Ring
D—Cab Control Console
E—Vent Cover and Retaining Ring

Continued on next page

JG31785,00003C3 –19–24JAN05–1/2

8. Install headliner, beginning with right rear corner.

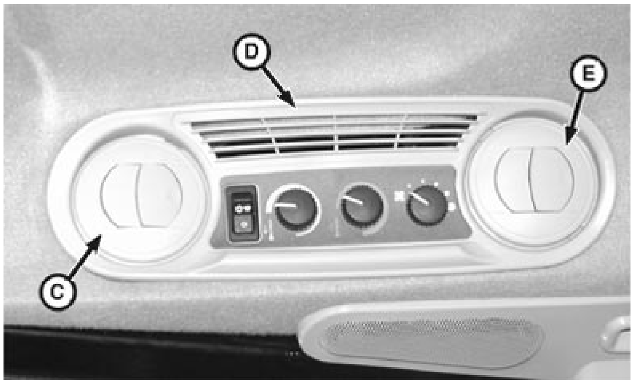
9. Install cab control console (D) with three mounting screws and insert vent covers and retaining rings (C and E).

10. Install console light assembly (B). Connect console light electrical connector.

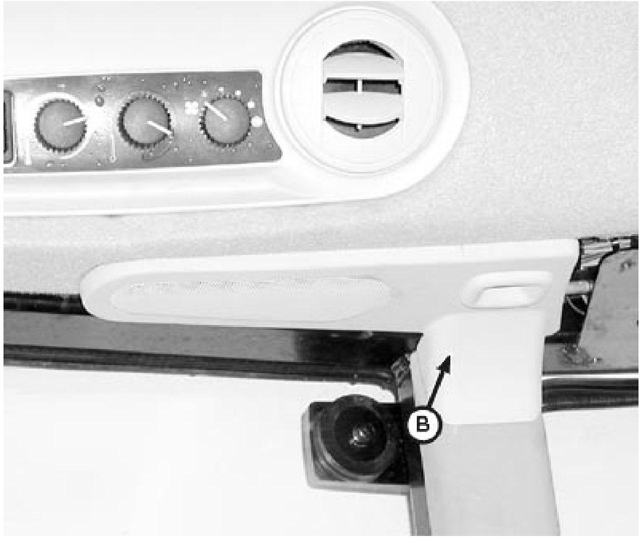
11. Install dome light assembly (A). Connect dome light electrical connector.

12. Install sun visor, mirror, and radio panel with radio, if equipped.

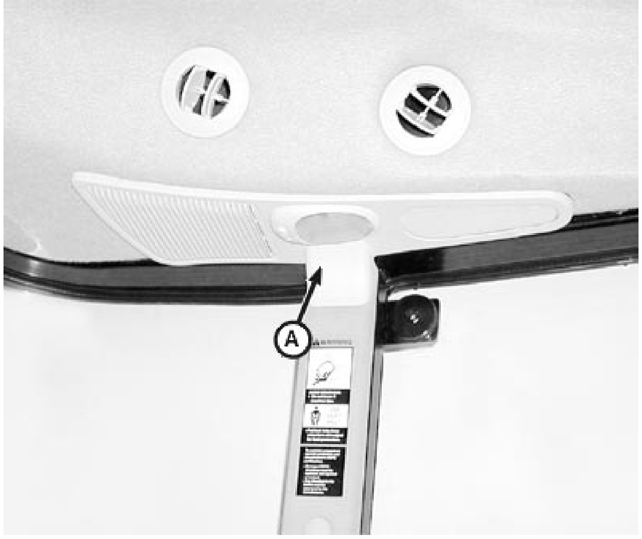
A—Dome Light Assembly
B—Console Light Assembly
C—Vent Cover and Retaining Ring
D—Cab Control Console
E—Vent Cover and Retaining Ring



LV6814 –UN–04JUN01



LV6813 –UN–03MAY01



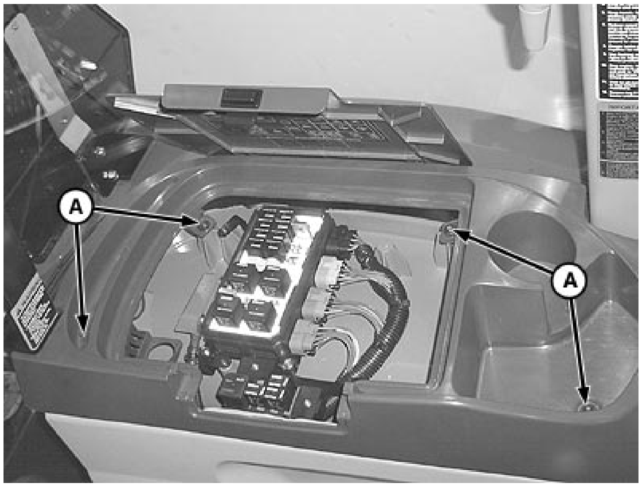
LV6812 –UN–03MAY01

JG31785,00003C3 –19–24JAN05–2/2

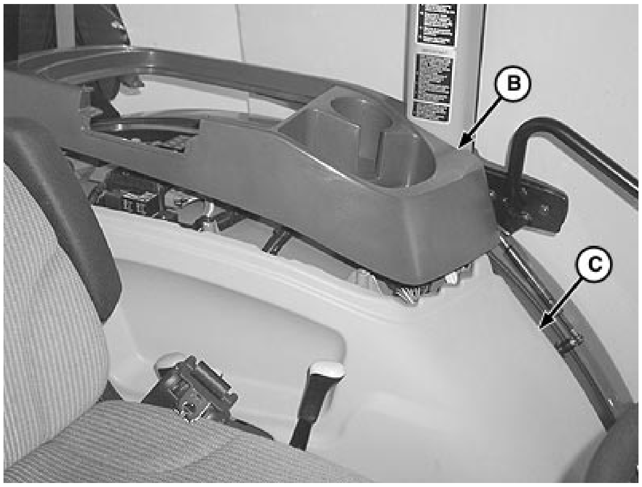
Remove and Install Left-Side Upholstery

1. Remove four screws (A).
2. Remove interior clip located at front edge of upholstery panel.
3. Raise left-side console (B) and remove left-side upholstery (C).
4. Install upholstery and console.
5. Install screws (A).

A—Screw (4 used)
B—Left-Side Console
C—Left-Side Upholstery



LV8663 –UN–15AUG03



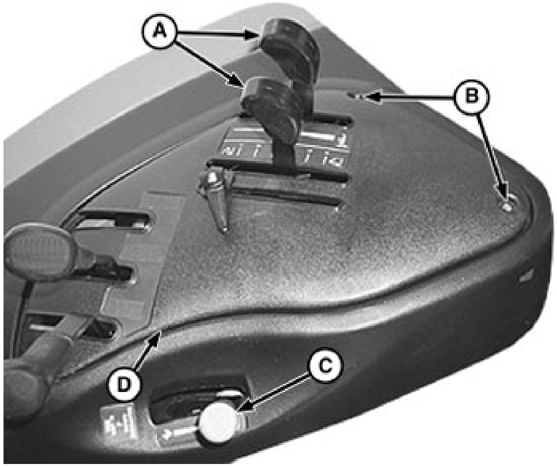
LV8664 –UN–15AUG03

JG31785,00003C4 –19–24JAN05–1/1

Remove and Install Right-Side Upholstery

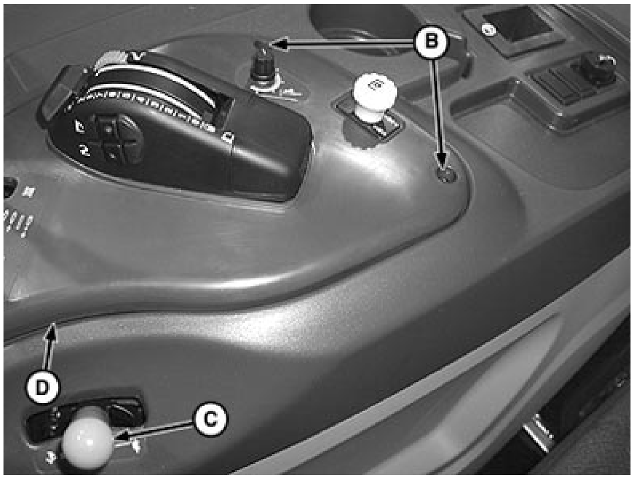
1. Remove rockshaft control lever handles (A), if equipped.
2. Remove throttle lever handle (C).
3. Remove cover mounting screws (B).
4. Remove cover (D).
5. Disconnect wire connectors (E—G), if equipped.

A—Rockshaft Control Lever Handle (2 used)
B—Screw (2 used)
C—Throttle Lever Handle
D—Cover
E—Connector
F—Connector
G—Connector



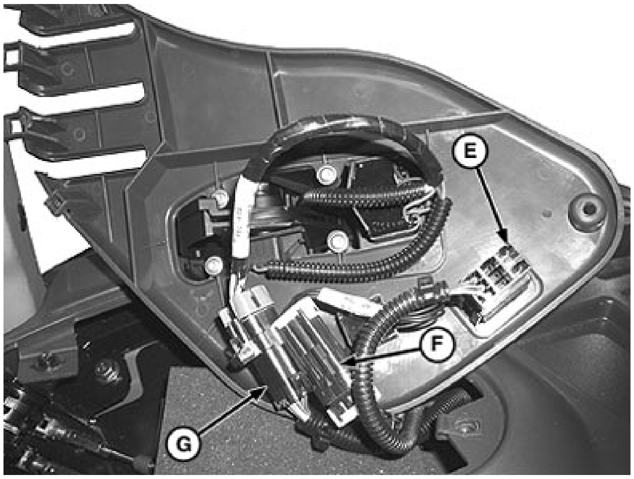
LV11469 –UN–03NOV04

Standard Hitch Controls



LV11470 –UN–03NOV04

EH Hitch Controls



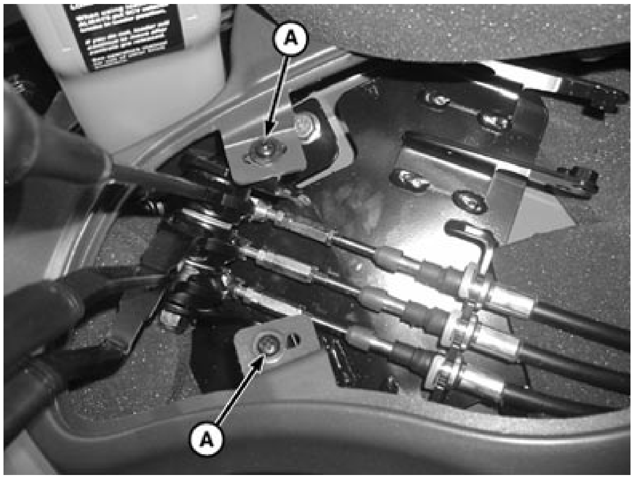
LV11471 –UN–03NOV04

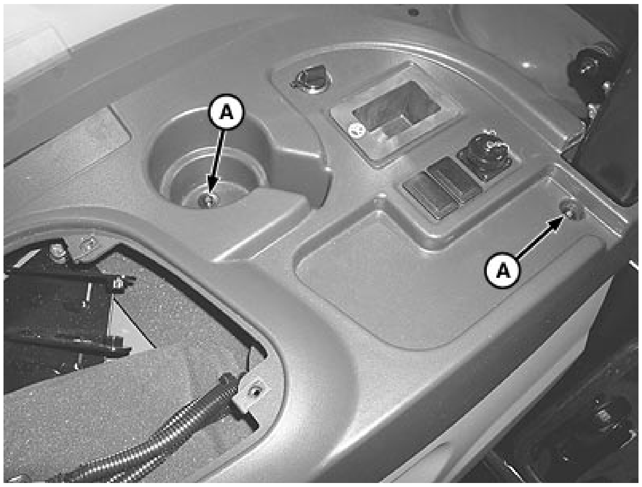
Continued on next page

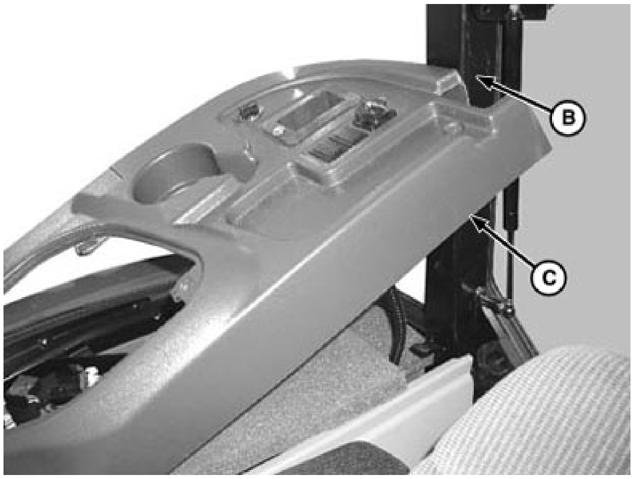
JG31785,00003C5 –19–24JAN05–1/5

6. Remove console screws (A).
7. Raise back end of console (C) and pivot end around cab post (B). Lift front of console over levers.

A—Console Mounting Screw (4 used)
B—Cab Post
C—Console


A
A
LV11750 –UN–19NOV04


A
A
LV10058 –UN–24AUG04


B
C
LV12025 –UN–06JAN05

Continued on next page JG31785,00003C5 –19–24JAN05–2/5

8. Disconnect lighter harness (A).

9. Remove button retaining floor mat to upholstery.

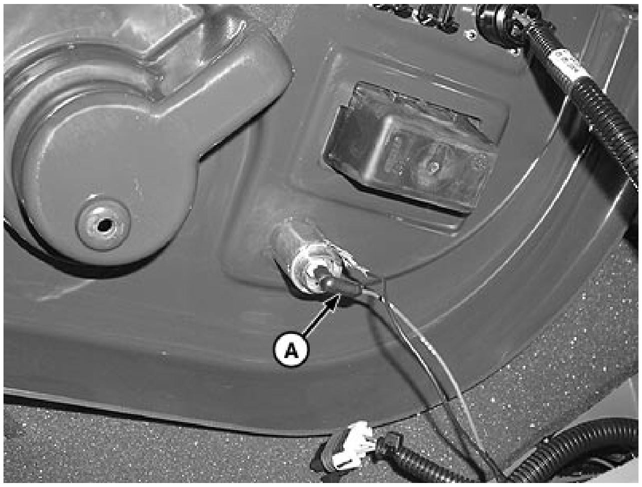
10. Lift floor mat (C) and remove upholstery panel (B).

11. Repair or replace as necessary.

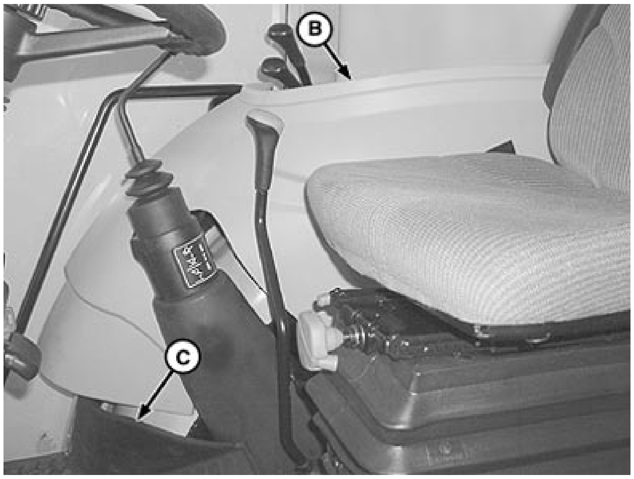
12. Install upholstery panel (B) and floor mat (C).

13. Connect lighter harness (A).

A—Lighter Harness
B—Upholstery Panel
C—Floor Mat



LV10084 –UN–25AUG04



LV12138 –UN–25JAN05

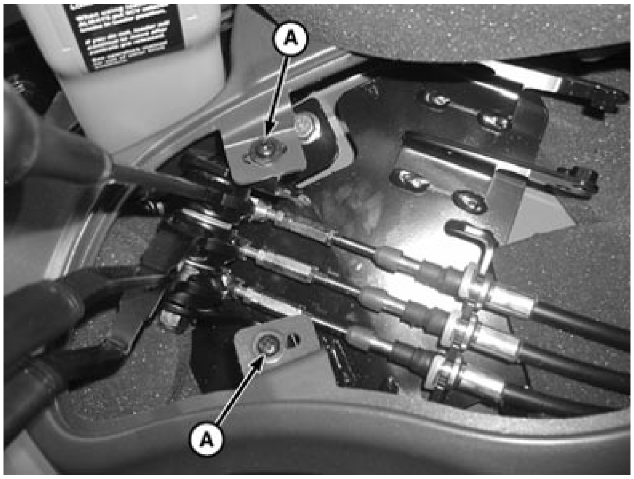
Continued on next page

JG31785,00003C5 –19–24JAN05–3/5

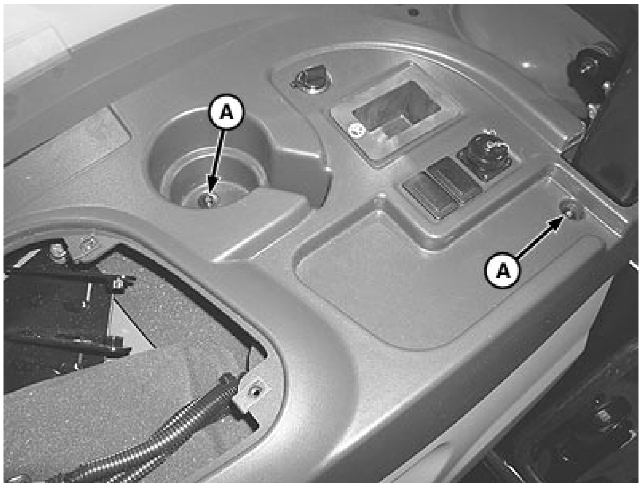
14. Place console (C) over levers and pivot end around cab post (B).

15. Install console screws (A).

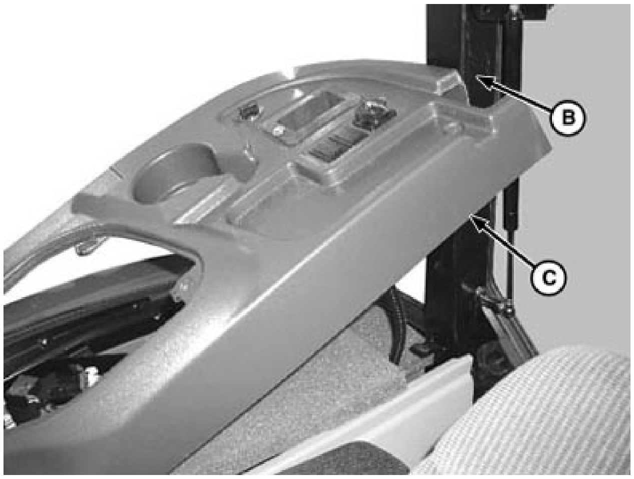
A—Console Mounting Screw (4 used)
B—Cab Post
C—Console



LV11750 –UN–19NOV04



LV10058 –UN–24AUG04



LV12025 –UN–06JAN05

Continued on next page

JG31785,00003C5 –19–24JAN05–4/5

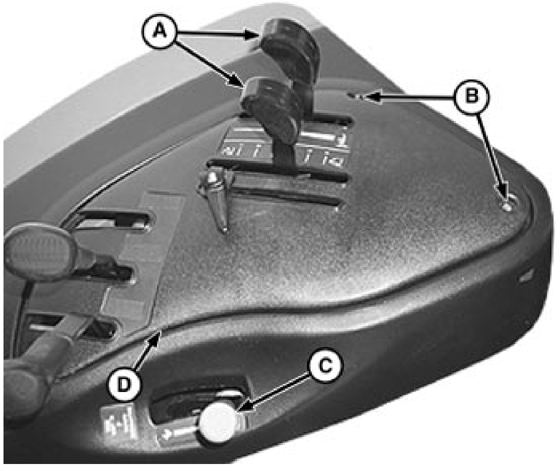
16. Connect wire connectors (E—G), if equipped.

17. Install cover (D).

18. Install cover mounting screws (B).

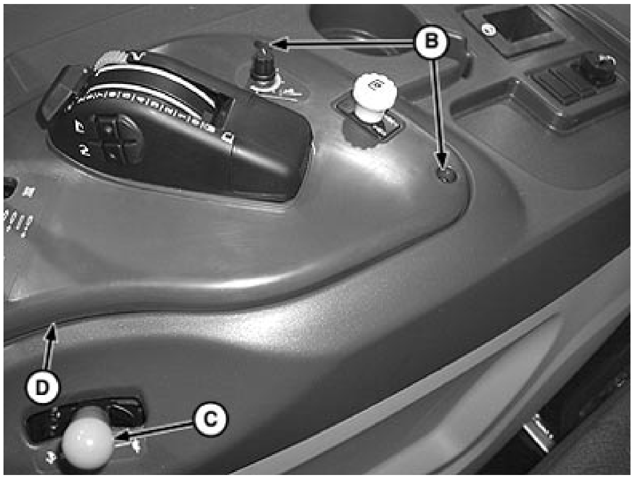
19. Install throttle lever handle (C) and rockshaft control lever handles (A), if equipped.

A—Rockshaft Control Lever Handle (2 used)
B—Screw (2 used)
C—Throttle Lever Handle
D—Cover
E—Connector
F—Connector
G—Connector



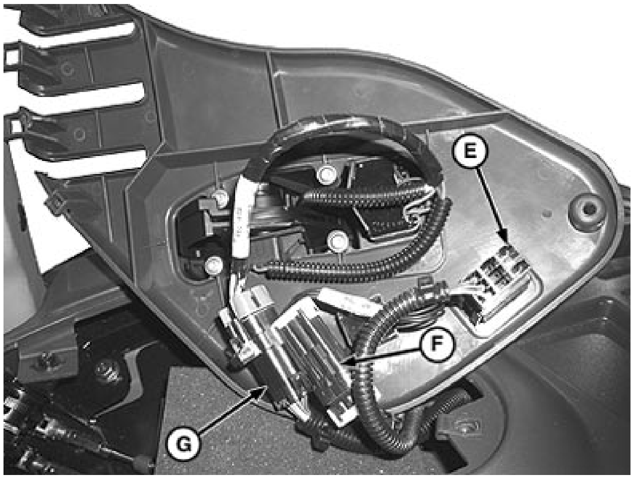
LV11469 –UN–03NOV04

Standard Hitch Controls



LV11470 –UN–03NOV04

EH Hitch Controls



LV11471 –UN–03NOV04

JG31785,00003C5 –19–24JAN05–5/5

Remove and Install Windshield

1. Remove auxiliary work lights (A), if equipped.

NOTE: Observe position and location of mounting hardware and rubber grommets during removal.

2. Remove socket head cap screws (B).

3. Remove rubber boot (C) and panel (D).

NOTE: Hood removed for illustration purposes.

4. Remove wiper nut cover (E) and wiper nut (F). Remove windshield wiper.

5. Remove nut and washers (H).

6. Remove socket head cap screw (I) from both sides of windshield.

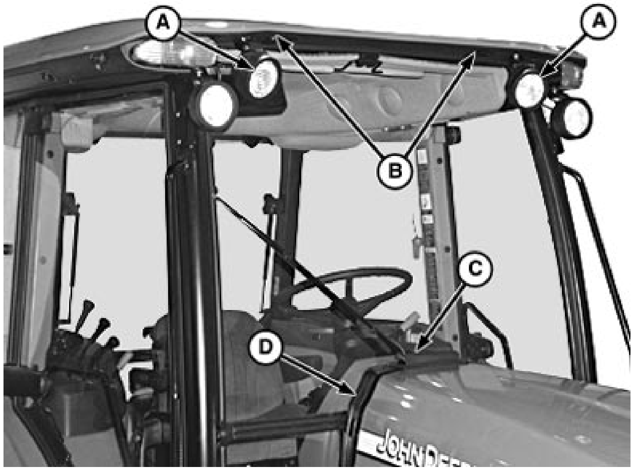
IMPORTANT: Support windshield when removing mounting bracket to prevent damage to windshield.

7. Remove cap screw and bracket (G).

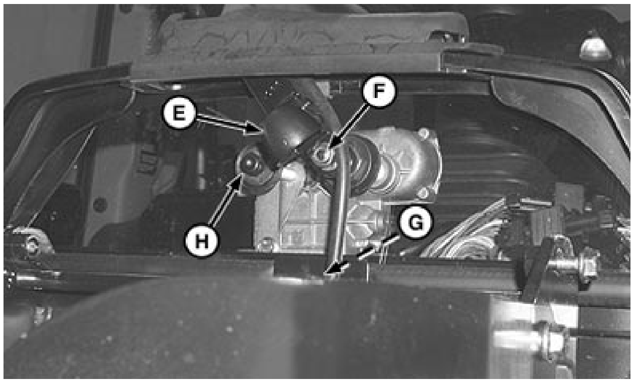
8. Remove windshield.

9. Make repairs as necessary.

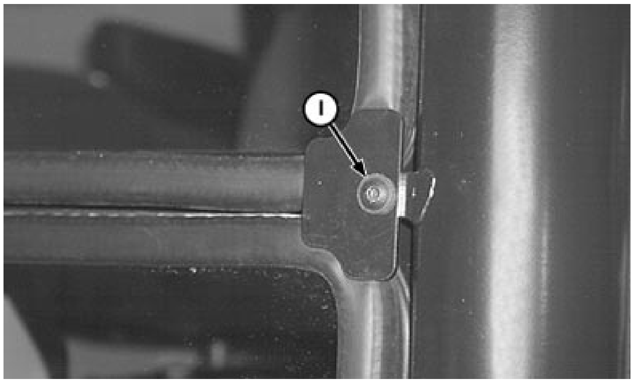
A—Auxiliary Work Lights (Optional Equipment)
B—Socket Head Cap Screws (4 used)
C—Rubber Boot
D—Panel
E—Wiper Nut Cover
F—Wiper Nut
G—Cap Screw and Bracket
H—Nut and Washers
I—Socket Head Cap Screw (2 used)



LV12166 –UN–04FEB05



LV12167 –UN–04FEB05



LV12168 –UN–04FEB05

Continued on next page

JG31785,00003C7 –19–31JAN05–1/2

10. Install windshield with cap screw and bracket (G).

NOTE: Make sure windshield seal completely contacts cab frame to prevent leakage.

11. Install socket head cap screws (I) to both sides of windshield. Tighten securely.

12. Install nut and washers (H).

13. Install windshield wiper and wiper nut (F). Install wiper nut cover (E).

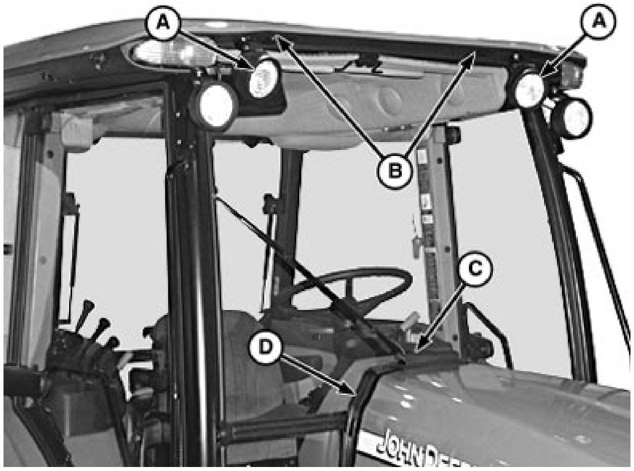
14. Install panel (D) and rubber boot (C).

15. Install socket head cap screws (B).

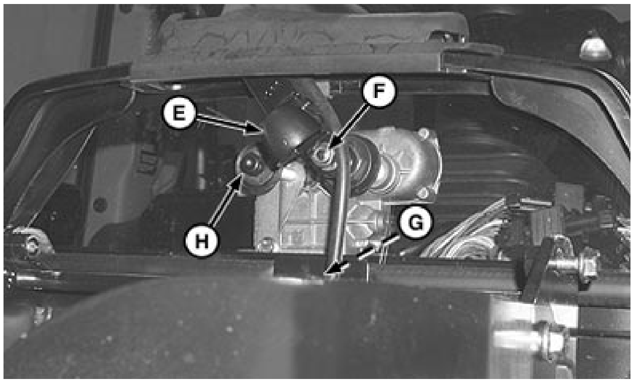
16. Install auxiliary work lights (A), if equipped.

17. Operate windshield wiper and make sure wiper blade is aligned with windshield.

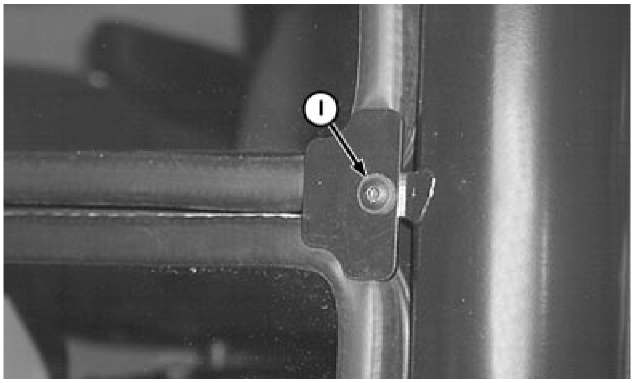
A—Auxiliary Work Lights (Optional Equipment)
B—Socket Head Cap Screws (4 used)
C—Rubber Boot
D—Panel
E—Wiper Nut Cover
F—Wiper Nut
G—Cap Screw and Bracket
H—Nut and Washers
I—Socket Head Cap Screw (2 used)



LV12166 –UN–04FEB05



LV12167 –UN–04FEB05



LV12168 –UN–04FEB05

JG31785,00003C7 –19–31JAN05–2/2

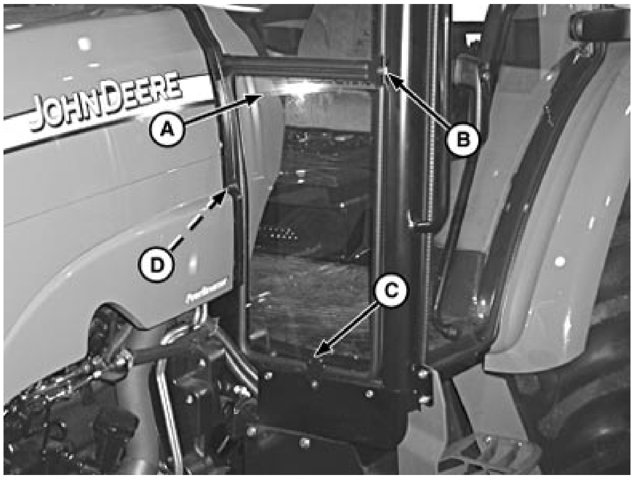
Remove and Install Front Lower Windows

NOTE: *Observe position and location of mounting hardware and rubber grommets during removal.*

1. Remove socket head cap screws and brackets (B and D).
2. Loosen socket head cap screw and bracket (C).
3. Lift window (A) up and away from socket head cap screw and bracket (C).
4. Repeat steps 1 through 3 for opposite side of cab if necessary.

NOTE: *Make sure window seal completely contacts cab frame to prevent leakage.*

5. Install window (A) and socket head cap screws and brackets (B and D). Tighten all mounting hardware securely.



A—Window
B—Socket Head Cap Screw and Bracket
C—Socket Head Cap Screw and Bracket
D—Socket Head Cap Screw and Bracket

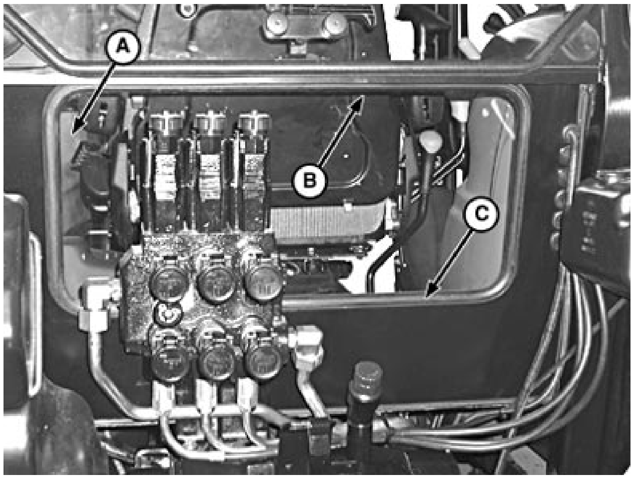
JG31785,00003C8 –19–31JAN05–1/1

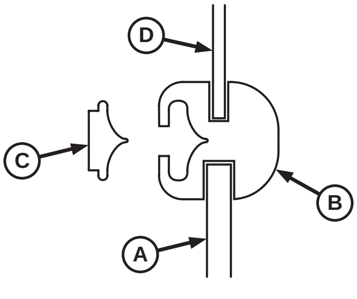
Remove and Install Rear Lower Window

1. Remove window seal insert (C) from window seal (B).
2. Remove rear lower window (A) outward from tractor.
3. Inspect window seal for wear or damage. Replace if necessary.

NOTE: *Liquid soap may be used to aid installation of seal and window.*

4. Install seal around window frame (D).
5. Insert rear lower window (A) into seal (B).
6. Install seal insert (C) into seal (B) using weather strip installation tool JDST-29.

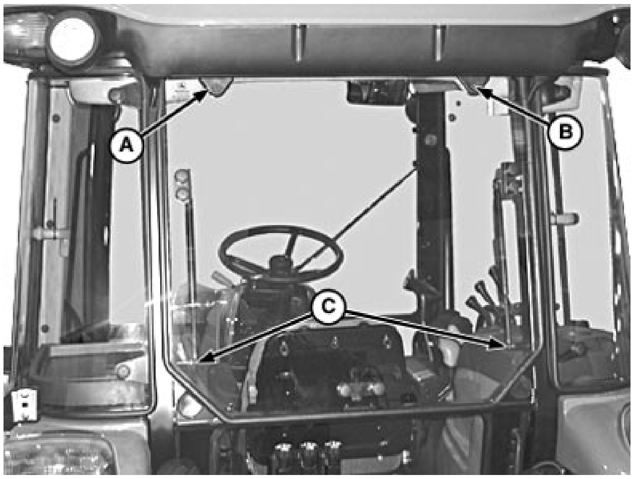




A—Rear Lower Window
B—Window Seal
C—Window Seal Insert
D—Window Frame

JG31785,00003D1 –19–07FEB05–1/1

Remove and Install Rear Upper Window



A—Screw
B—Screw
C—Cylinder Spring Clip

1. Release window hand latch.

IMPORTANT: Do not completely remove cylinder spring clip. Damage may occur.

2. Slightly dislodge and lift spring clip (C) with a small screwdriver to release cylinder from ball stud.

IMPORTANT: Support rear upper window to prevent it from falling when remaining hardware is removed.

NOTE: Observe position and location of mounting hardware and rubber grommets during removal.

3. While supporting rear window, remove screws (A and B). Remove rear window assembly.

4. Position window assembly against frame and install screws (A and B). Tighten mounting hardware securely.

5. Slightly dislodge and lift spring clip (C) with a small screwdriver and push clip into position to retain cylinder on ball stud.

JG31785,00003CA –19–31JAN05–1/1

Remove and Install Side Windows

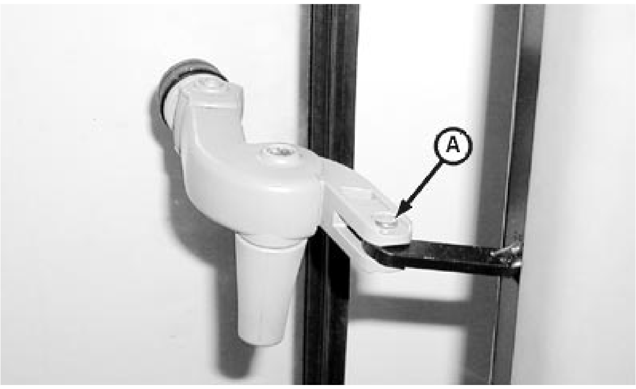
1. Remove pin and retaining clip (A) from side window latch.

NOTE: Observe position and location of mounting hardware and rubber grommets during removal.

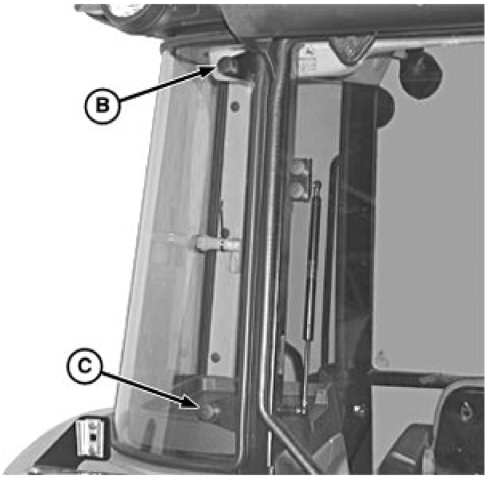
2. Remove lower mounting hardware (C) from window first.

IMPORTANT: Support side window to prevent it from falling when remaining hardware is removed.

3. Remove upper mounting hardware (B) from window and remove window.
4. Repeat steps 1 through 3 for opposite side of cab if necessary.
5. Install window and mounting hardware (B and C). Tighten all mounting hardware securely.
6. Install latch pin and retaining clip (A) to side window latch mount.



Side Window Hinge



A—Latch Pin and Retaining Clip
B—Upper Mounting Hardware
C—Lower Mounting Hardware

JG31785,00003CB –19–01FEB05–1/1

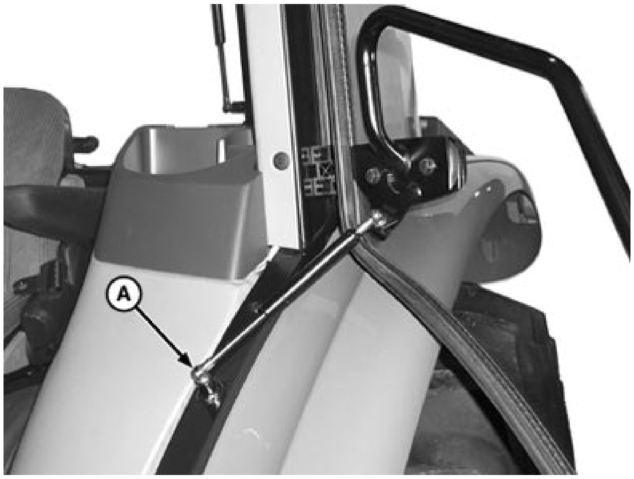
Remove and Install Cab Doors

NOTE: Left side cab door shown; right side is the same.

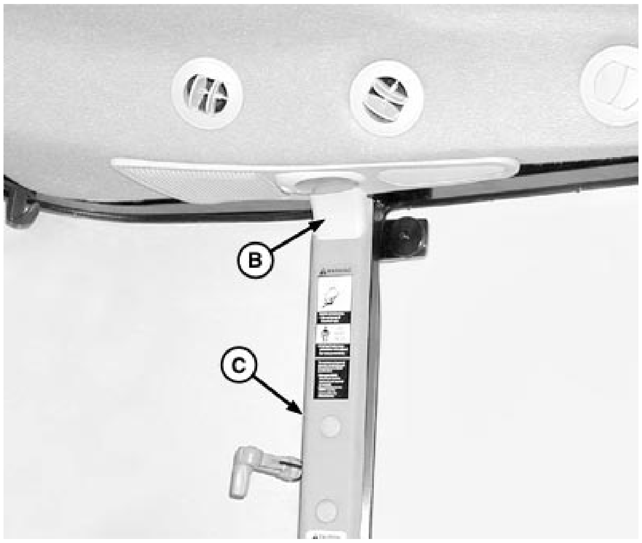
IMPORTANT: Do not completely remove cylinder spring clip. Damage may occur.

1. Slightly dislodge and lift spring clip (A) with a small screwdriver to release cylinder from ball stud.

2. Remove dome light assembly (B) and center cab support panel (C).



LV12191 –UN–04FEB05



LV8670 –UN–20AUG03

A—Spring Clip
B—Dome Light Assembly
C—Center Cab Support Panel

Continued on next page

JG31785,00003CC –19–01FEB05–1/3

3. Attach a suitable hoist to cab door. Weight of door is approximately 23 kg (51 lb).

4. Remove flange nuts from lower door hinge (B) first, then remove flange nuts from upper door hinge (A) and remove door.

5. Repair or replace cab door as necessary.

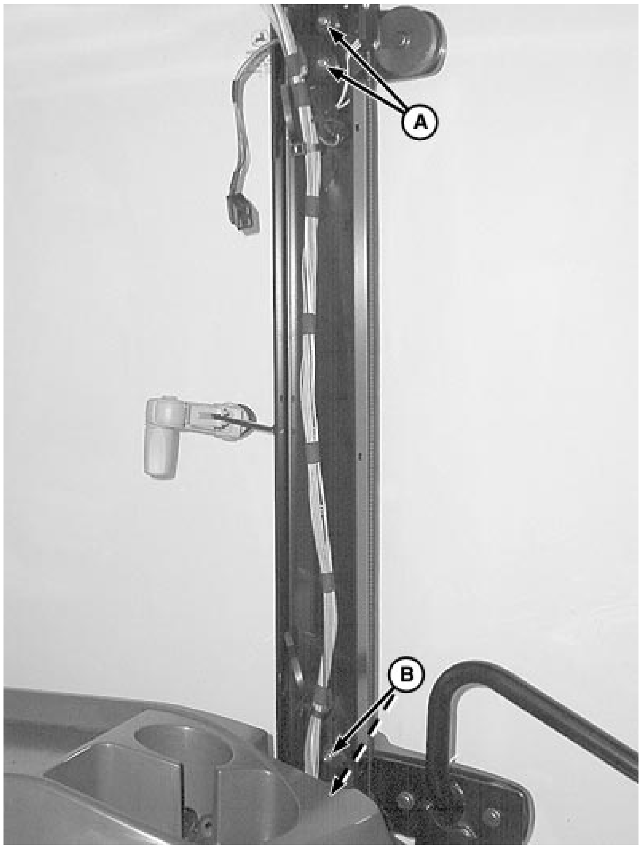
6. Install cab door. Install flange nuts on upper door hinge (A) and lower door hinge (B). Tighten flange nuts to specification.

Specification

Cab Door Hinge Mounting Flange
Nuts—Torque .... 28 N•m (20 lb-ft)

7. Gently close cab door. Verify smooth operation of door hinges and latch. Check alignment of door latch and seal. Adjust hinges and latch striker if necessary.

A—Upper Door Hinge
B—Lower Door Hinge



LV8671 –UN–20AUG03

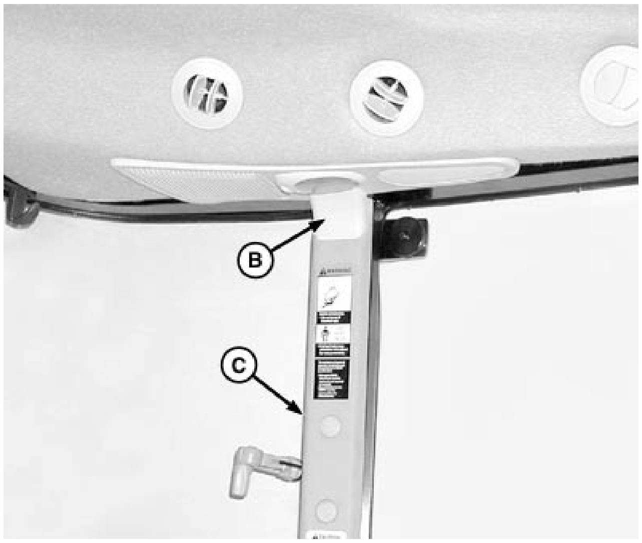
Continued on next page

JG31785,00003CC –19–01FEB05–2/3

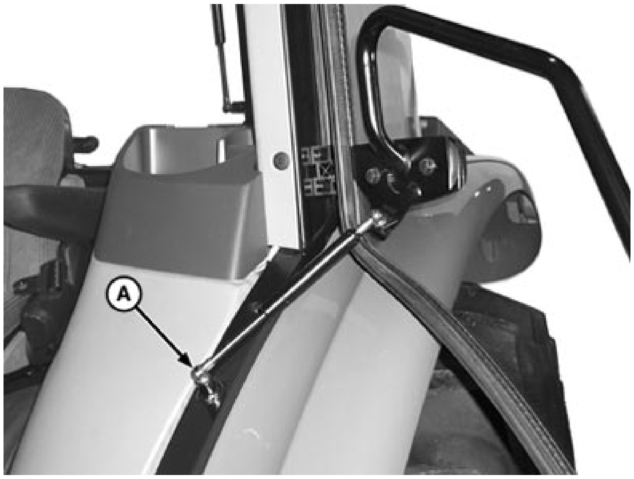
8. Install center cab support panel (C) and dome light assembly (B).

9. Slightly dislodge and lift spring clip (A) with a small screwdriver and push clip into position to retain cylinder on ball stud.

A—Spring Clip
B—Dome Light Assembly
C—Center Cab Support Panel



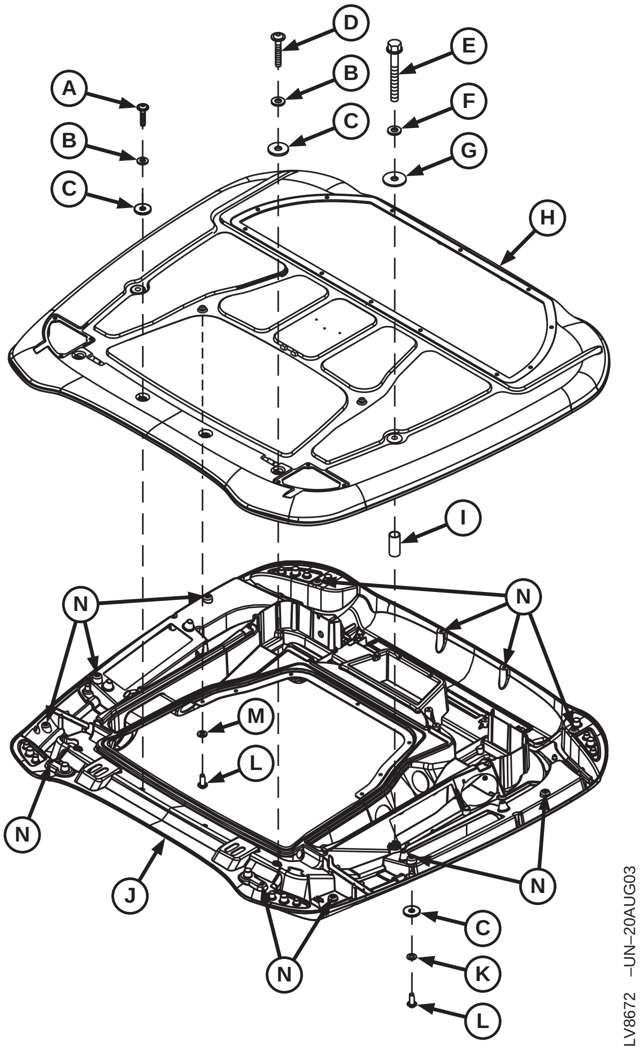
LV8670 –UN–20AUG03



LV12191 –UN–04FEB05

JG31785,00003CC –19–01FEB05–3/3

Remove and Install Cab Outer Roof



1. Remove antenna. (See Replace Antenna in Section 40, Group 10.)
2. Remove screws (A and D) and cap screws (E) with washers and seals from top of cab outer roof (H).
3. Remove screws (L), washers (K), and seals (C) from screw locations (N).
4. Remove cab headliner. (See Remove and Install Headliner in Section 90, Group 15.)
5. Remove screws (L) and washers (M) from inside cab.
6. Remove cab outer roof (H).
7. Repair or replace outer roof as necessary.

IMPORTANT: Spacer (I) must be in place before installing cab outer roof to prevent damage to outer roof when cap screw (E) is tightened.

8. Install spacer (I) if removed.
9. Install cab outer roof and seven screws (L) and washers (M).
10. Install cab headliner. (See Remove and Install Headliner in Section 90, Group 15.)
11. Install twelve screws (L), flat washers (K) and seals (C) at screw locations (N).
12. Install screws (A and D) and cap screws (E) with washers and seals.
13. Install antenna. (See Replace Antenna in Section 40, Group 10.)

A—Screw (2 used)
B—Washer (4 used)
C—Seal (16 used)
D—Screw (2 used)
E—Cap Screw (2 used)
F—Washer (2 used)
G—Seal (2 used)
H—Cab Outer Roof
I—Spacer (2 used)
J—Cab Inner Roof
K—Washer (12 used)
L—Screw (19 used)
M—Washer (7 used)
N—Screw Locations

Remove and Install A/C Housing Inner Roof

1. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

2. Remove windshield. (See Remove and Install Windshield in Section 90, Group 15.)

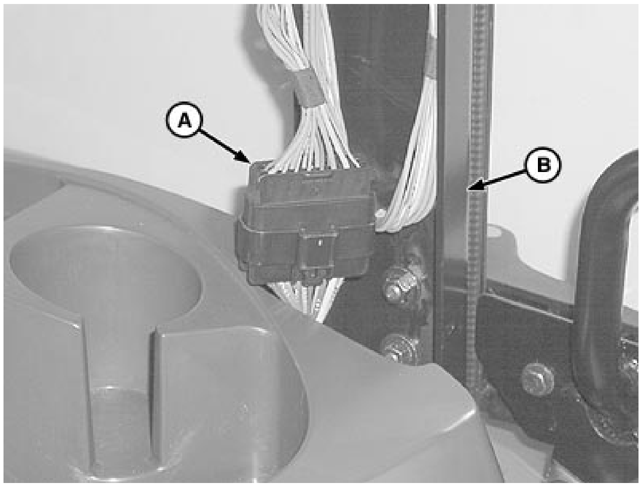
3. Remove cab headliner. (See Remove and Install Headliner in Section 90, Group 15.)

4. Drain coolant from engine.

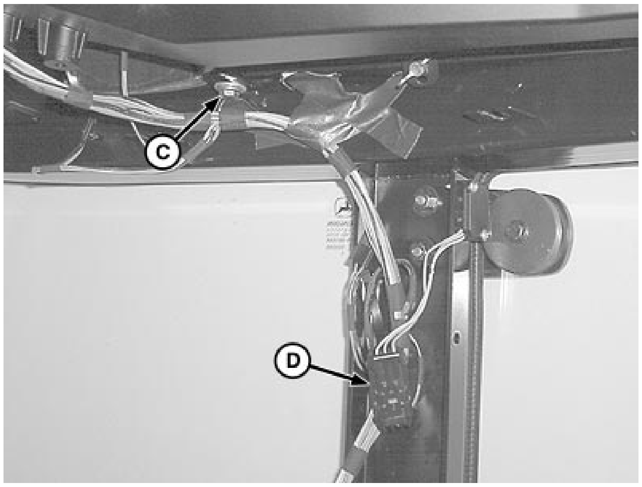
5. Remove panel from left center support (B).

6. Disconnect cab roof harness connector (A).

7. Disconnect left door switch harness connector (D) and remove cap screw (C).



LV8673 –UN–25AUG03



LV8674 –UN–25AUG03

A—Cab Roof Harness Connector
B—Left Center Support
C—Cap Screw
D—Door Switch Harness Connector

Continued on next page

JG31785,00003CE –19–01FEB05–1/11

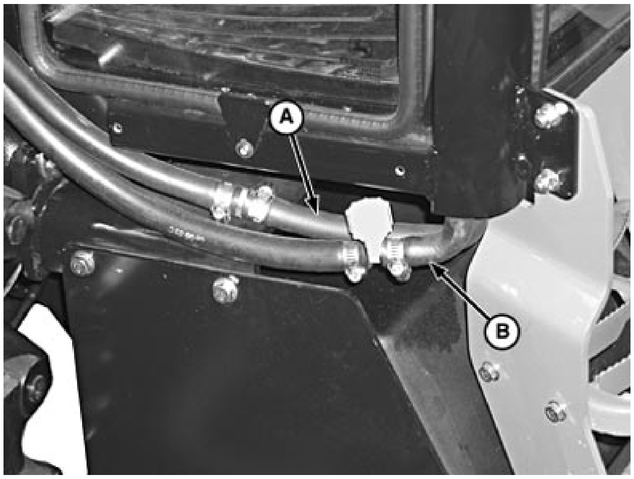
NOTE: Mark heater hoses before removal, to aid during installation.

Close all open lines to prevent contamination.

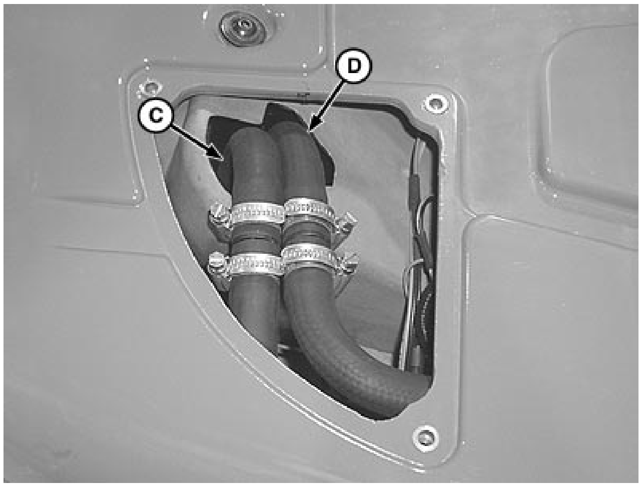
8. Remove left front crop guard and disconnect heater hoses (A and B). Mark heater hoses using tags or labels to aid during installation. Close all lines using caps or plugs.

9. Disconnect heater lines (C and D), located under cover at left front corner of cab roof, and remove both lines from tractor.

A—Heater Hose
B—Heater Hose
C—Heater Line
D—Heater Line



LV12193 –UN–04FEB05



LV8676 –UN–25AUG03

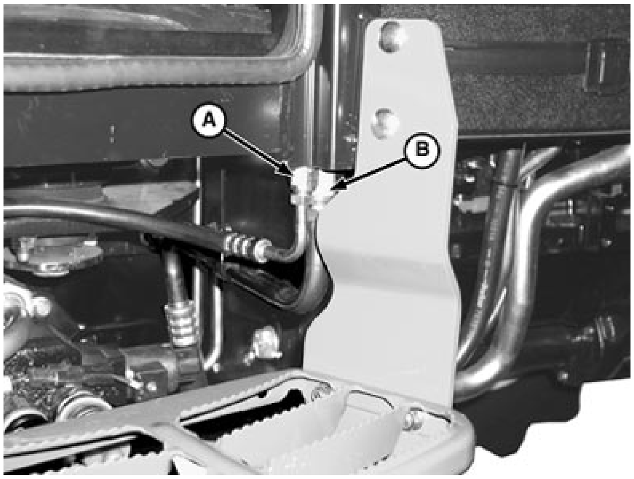
Continued on next page

NOTE: Close all open lines to prevent contamination.

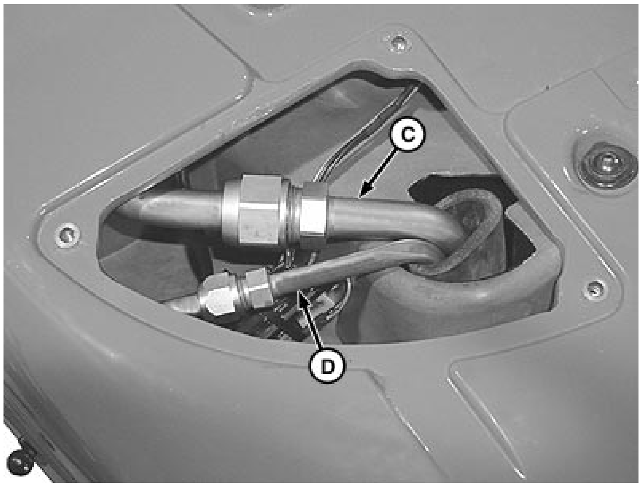
10. Disconnect A/C lines (A and B). Close lines using caps or plugs to prevent contamination.

11. Disconnect A/C lines (C and D) at right front corner of cab roof and remove both lines from tractor. Close all open lines using caps or plugs to prevent contamination.

A—A/C Line
B—A/C Line
C—A/C Line
D—A/C Line



LV12194 –UN–04FEB05

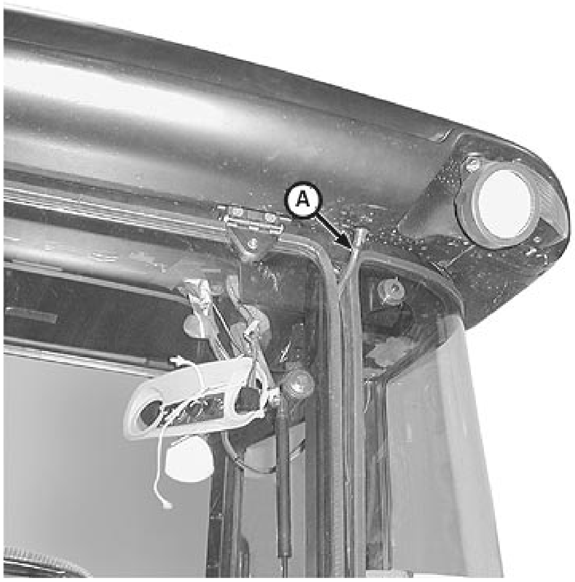


LV8678 –UN–25AUG03

Continued on next page JG31785,00003CE –19–01FEB05–3/11

12. Remove right and left drain lines (A) from rear of cab roof.

A—Drain Line (2 used)



LV6981 –UN–15MAY01

Continued on next page

JG31785,00003CE –19–01FEB05–4/11

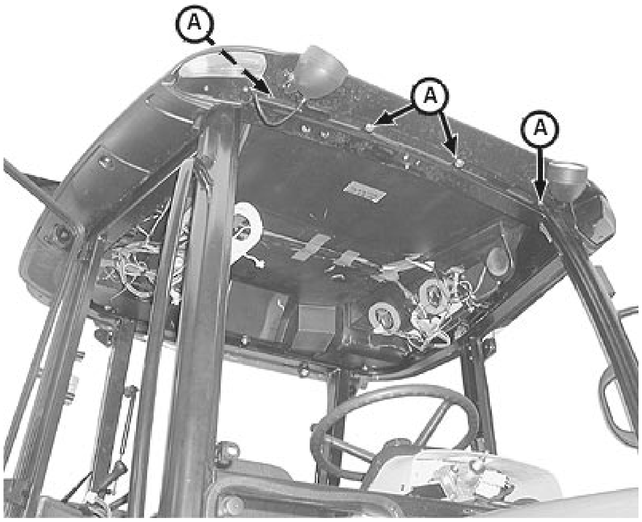
13. Remove front cap screws (A).

14. Remove rear cap screws (B).

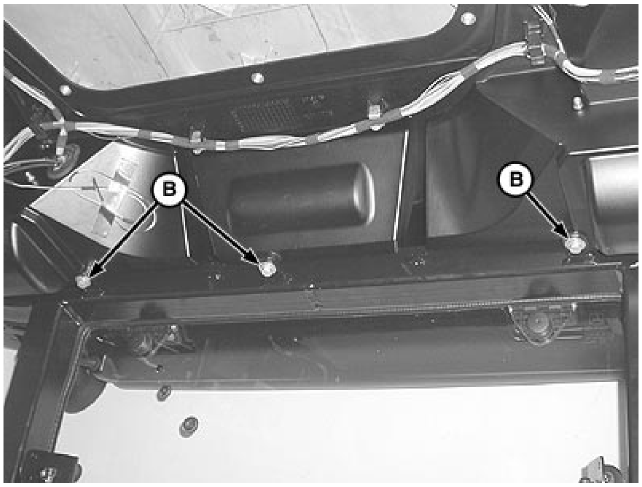
15. Remove right-side ground wires (C).

16. Remove right-side cap screw (D).

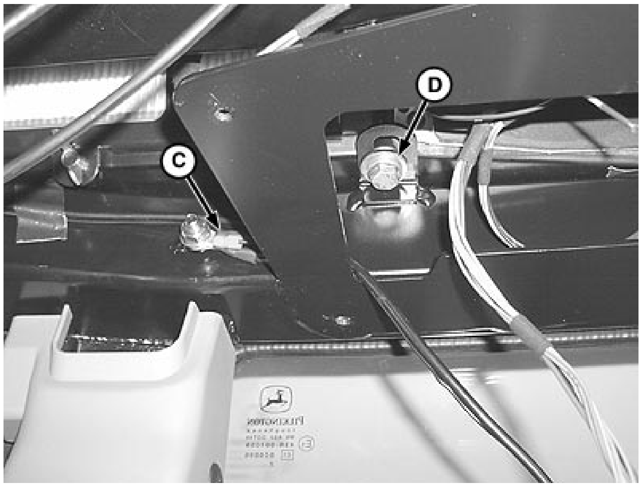
A—Front Cap Screw (4 used)
B—Rear Cap Screw (3 used)
C—Ground Wires
D—Right-Side Cap Screw



LV6974 –UN–15MAY01



LV8680 –UN–25AUG03



LV8679 –UN–25AUG03

Continued on next page

17. Remove interior and exterior air filters. (See Remove, Inspect, and Install Cab Interior Recirculating Air Filters and Remove, Inspect, and Install Exterior Cab Intake Air Filter in Section 90, Group 15.)

18. Route lifting strap (A) through left air filter opening across underside of inner roof and through right air filter opening. Attach both ends to a suitable lifting device.

19. Attach lifting strap (B) to center of lifting strap (A) under cab roof. Route strap (B) between cab frame and inner roof, and connect to lifting device.

IMPORTANT: Do not allow straps to contact cab flood lights and warn/turn lights while lifting inner roof or damage will result.

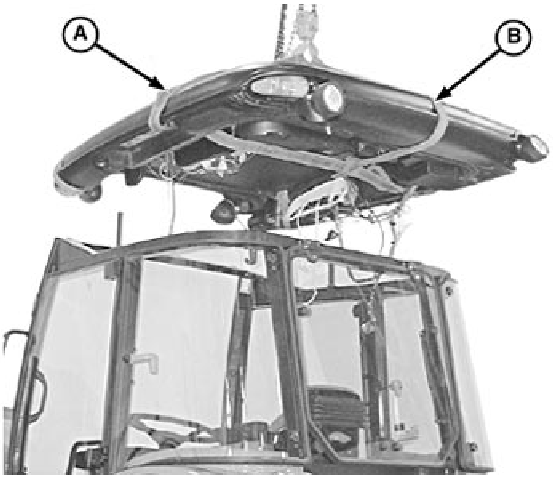
20. Route straps through holes in left and right front corners of inner roof and attach to lifting device.

21. Lift cab inner roof from tractor. Make repairs or replace as necessary.

22. Replace inner cab roof-to-cab frame seal.

IMPORTANT: Make sure cab roof wiring will not be pinched while installing inner cab roof to cab frame.

23. Install inner cab roof on cab frame. Make sure cab roof wiring will not be pinched while installing inner cab roof to cab frame.



LV12195 –UN–04FEB05

A—Lifting Strap
B—Lifting Strap

Continued on next page

24. Install front cap screws (A).

25. Install rear cap screws (B).

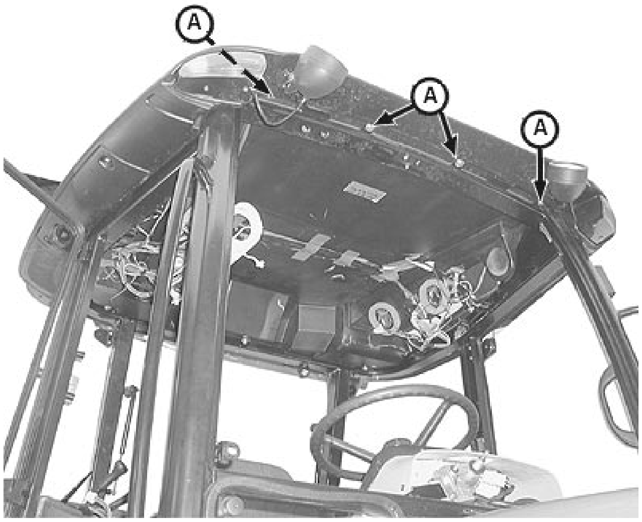
26. Install right-side cap screw (D) and ground wires (C).

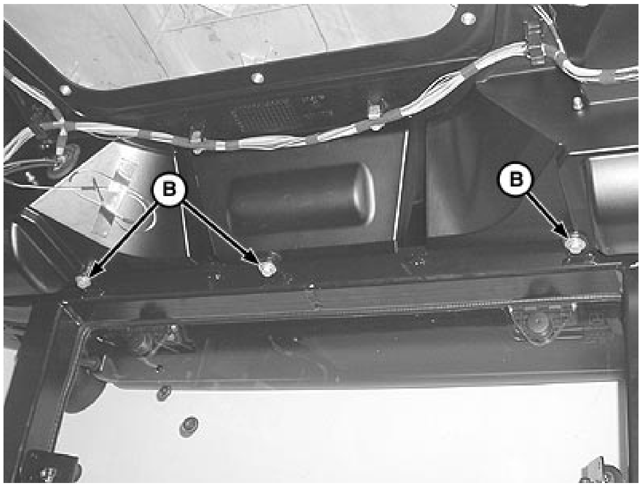
27. Tighten mounting cap screws (A, B, and D) to specification.

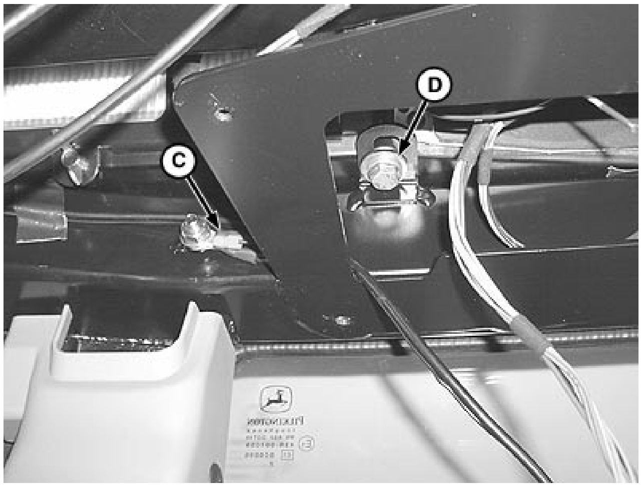
Specification

Inner Cab Roof Mounting Cap Screw—Torque.. 12 N•m (106 lb-in.)

A—Front Cap Screw (4 used)
B—Rear Cap Screw (3 used)
C—Ground Wires
D—Right-Side Cap Screw


A
A
A
LV6974 –UN–15MAY01


B
B
LV8680 –UN–25AUG03

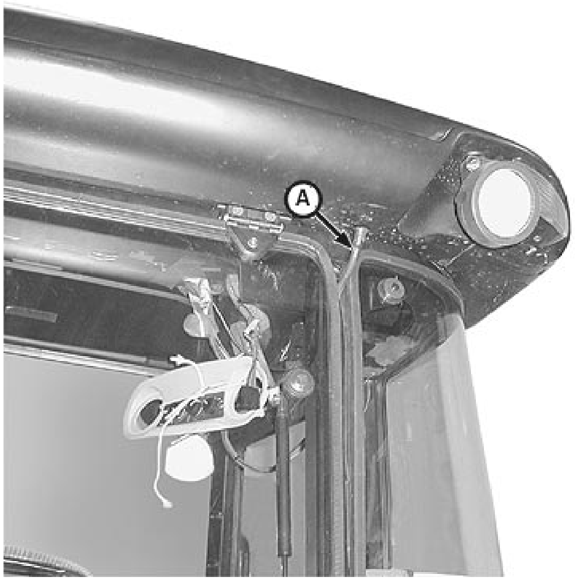

D
C
LV8679 –UN–25AUG03

Continued on next page

JG31785,00003CE –19–01FEB05–7/11

28. Install right and left cab roof drain lines (A).

A—Drain Line (2 used)



LV6981 –UN–15MAY01

Continued on next page

JG31785,00003CE –19–01FEB05–8/11

NOTE: Install new O-rings on A/C lines. Used or damaged O-rings will leak.

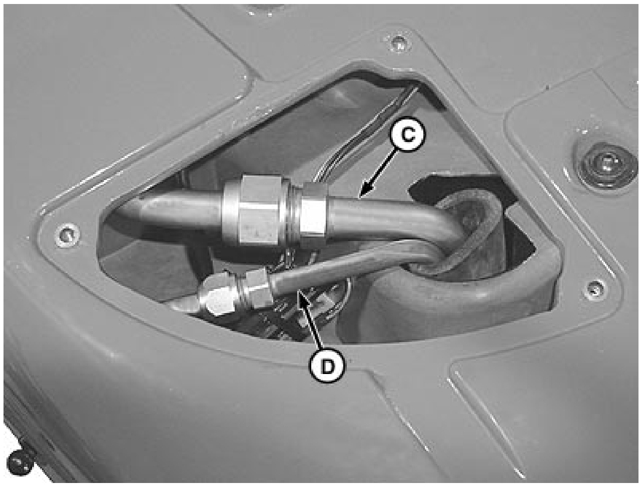
29. Apply a small amount of TY22101 PAG Refrigeration Oil on O-rings before connecting A/C lines.

30. Install A/C lines (C and D) at right front corner of cab roof. Tighten lines to specification.

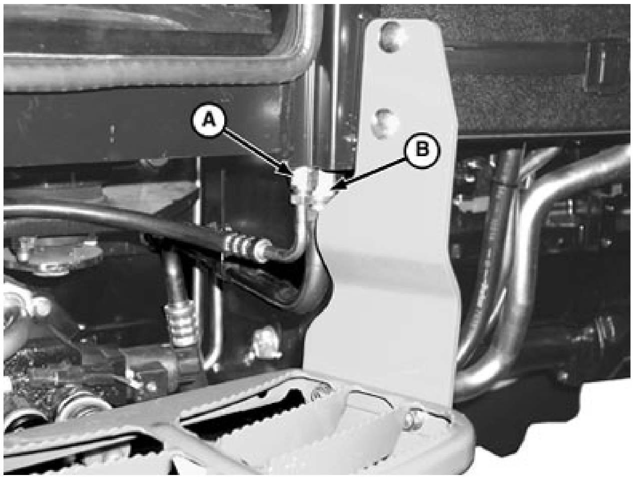
31. Connect A/C lines (A and B). Tighten lines to specification.

Specification	
Cab A/C Lines—Torque	45 N•m (33 lb-ft)

A—A/C Line
B—A/C Line
C—A/C Line
D—A/C Line



LV8678 –UN–25AUG03



LV12194 –UN–04FEB05

Continued on next page

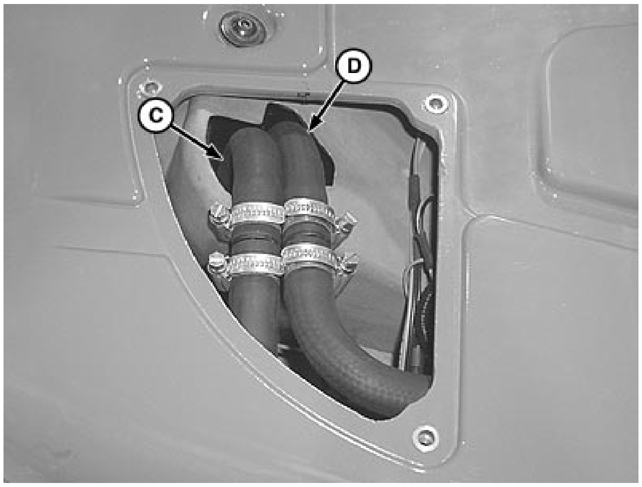
JG31785,00003CE –19–01FEB05–9/11

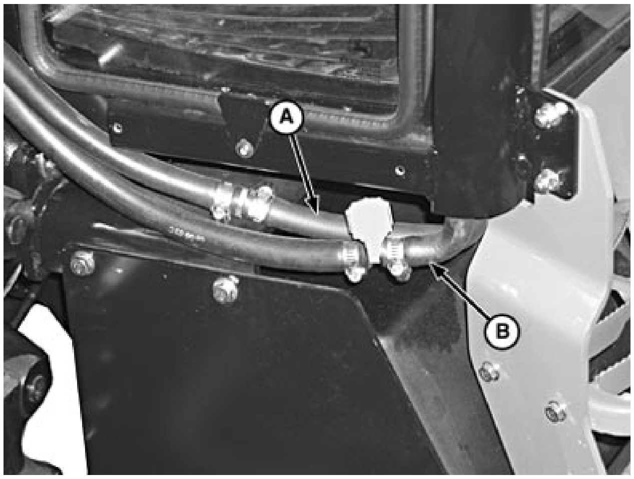
32. Install heater hoses (C and D) at left front corner of cab roof.

33. Connect heater hoses (A and B).

34. Install left front crop guard.

A—Heater Hose
B—Heater Hose
C—Heater Hose
D—Heater Hose


D
C
LV8676 –UN–25AUG03


A
B
LV12193 –UN–04FEB05

Continued on next page

JG31785,00003CE –19–01FEB05–10/11

35. Connect left door switch harness connector (D).

36. Install cap screw (C) and tighten to specification.

Specification

Inner Cab Roof Mounting Cap Screw—Torque... 12 N•m (106 lb-in.)

37. Connect cab roof harness connector (A).

38. Install panel on left center support (B).

39. Install cab headliner. (See Remove and Install Headliner in Section 90, Group 15.)

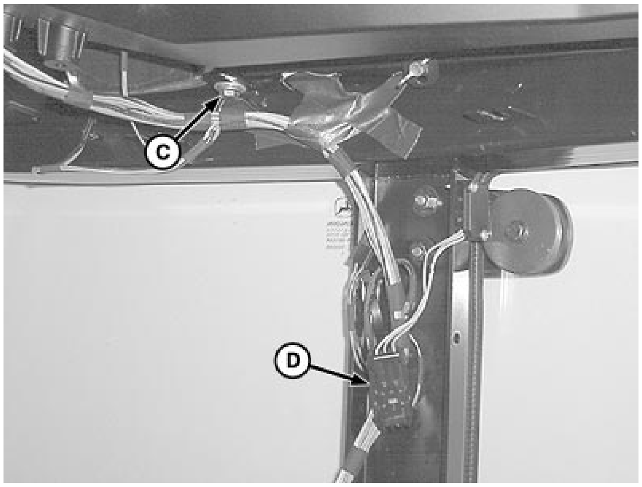
40. Install windshield. (See Remove and Install Windshield in Section 90, Group 15.)

41. Fill radiator with coolant.

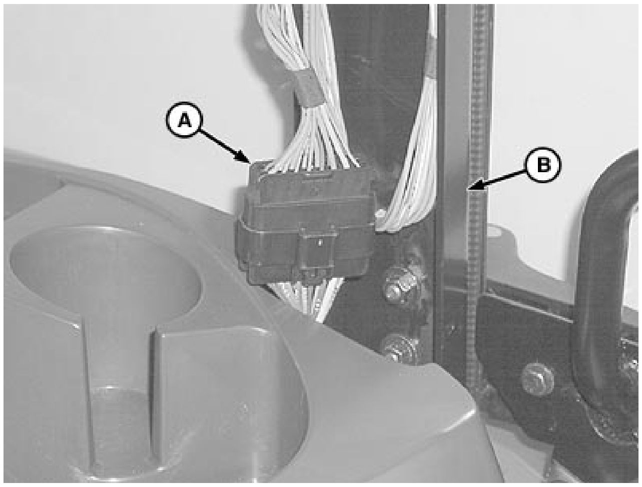
42. Evacuate and charge air conditioning system. (See Charge Air Conditioning System in Section 90, Group 20.)

    Start engine and allow it to reach proper operating temperature. Adjust coolant level in recovery tank. (See Diesel Engine Coolant in Section 10, Group 20.)

A—Cab Roof Harness Connector
B—Left Center Support
C—Cap Screw
D—Door Switch Harness Connector



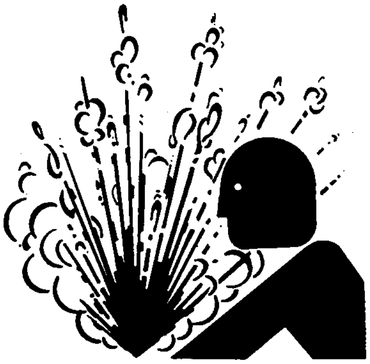
LV8674 –UN–25AUG03



LV8673 –UN–25AUG03

JG31785,00003CE –19–01FEB05–11/11

Remove Cab



TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

1. Block wheels, front and rear.
2. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

NOTE: Cooling system capacity is approximately 11.4 L (3 gal).

3. Drain coolant from radiator.

NOTE: Fuel tank capacity is approximately 126.8 L (33.5 gal).

4. Drain fuel from tank.
5. Disconnect battery cables, negative (—) cable first.

Continued on next page

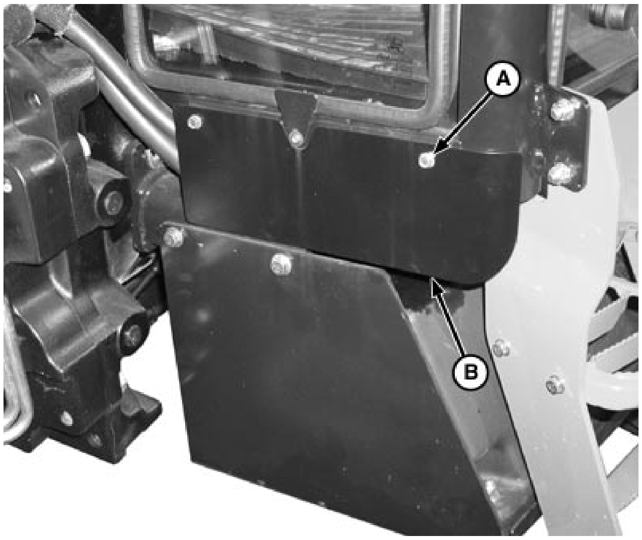
JG31785,00003CF –19–01FEB05–1/23

6. Remove cap screws (A) and left-hand side crop guard (B).

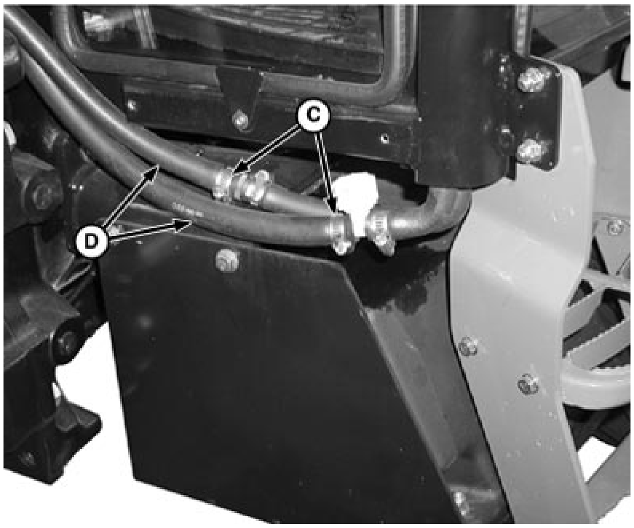
NOTE: Close all openings using caps and plugs to prevent contamination. Tag or label heater hoses to aid during installation.

7. Loosen hose clamps (C) and disconnect heater hoses (D). Close all openings using caps and plugs.

A—Cap Screw (2 used)
B—Left-Hand Side Crop Guard
C—Hose Clamp (2 used)
D—Heater Hoses



LV10905 –UN–13OCT04

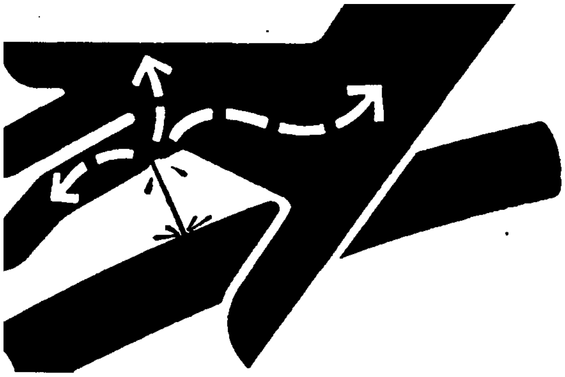


LV10906 –UN–06OCT04

Continued on next page

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

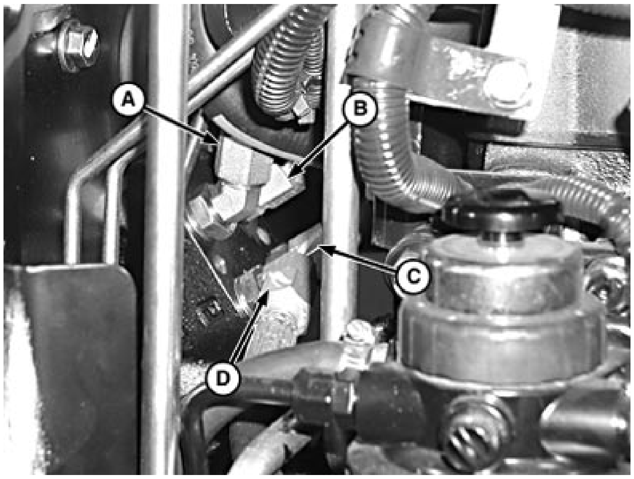
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 –UN–23AUG88

NOTE: Close all openings using caps and plugs to prevent contamination. Tag or label hydraulic hoses to aid during installation.

8. Disconnect hydraulic hoses (A—D). Close all openings using caps and plugs.



LV12239 –UN–15FEB05

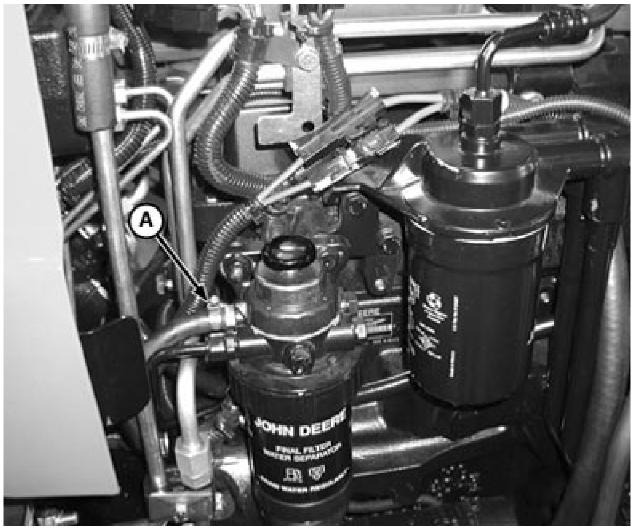
A—Hydraulic Hose
B—Hydraulic Hose
C—Hydraulic Hose
D—Hydraulic Hose

Continued on next page

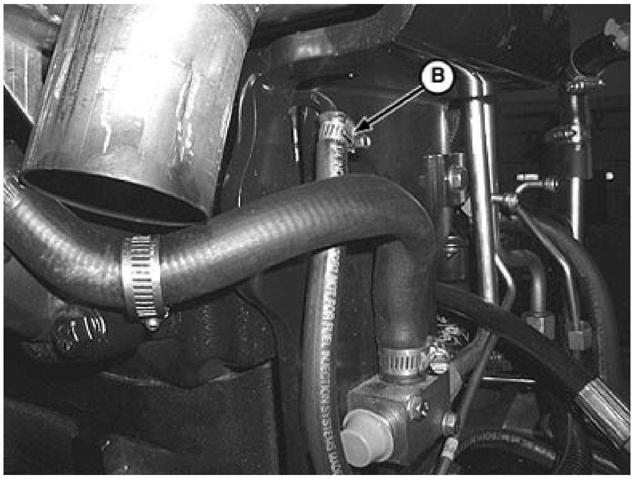
NOTE: Close all openings using caps and plugs to prevent contamination.

9. Disconnect fuel supply and return hoses (A and B). Close all openings using caps and plugs.

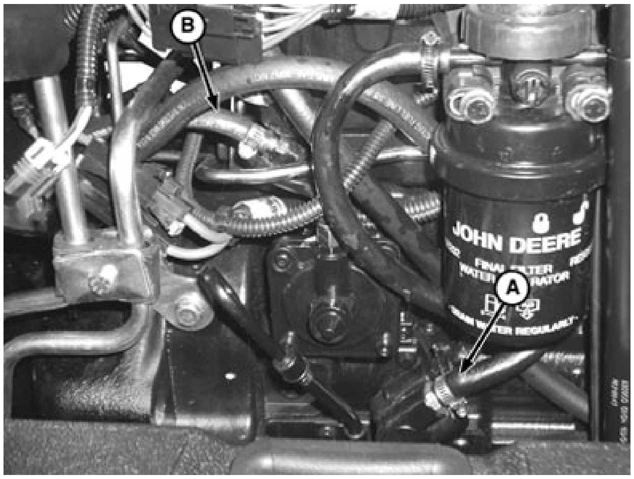
A—Fuel Supply Hose
B—Fuel Return Hose


A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV10899 –UN–06OCT04

4-Cylinder Supply Hose


B
LV11307 –UN–20OCT04

4-Cylinder Return Hose

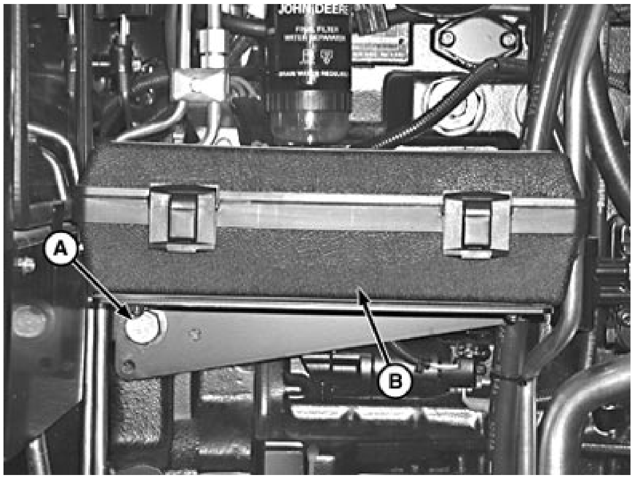

B
A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR
LV11306 –UN–20OCT04

5-Cylinder Hoses

Continued on next page

10. Remove cap screw (A) and toolbox (B) if equipped.

A—Cap Screw
B—Optional Toolbox



LV12240 –UN–15FEB05

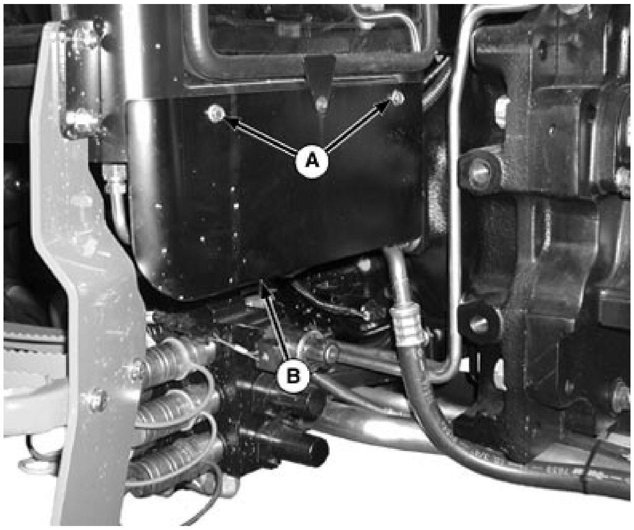
JG31785,00003CF –19–01FEB05–5/23

11. Remove cap screws (A) and right-hand side crop guard (B).

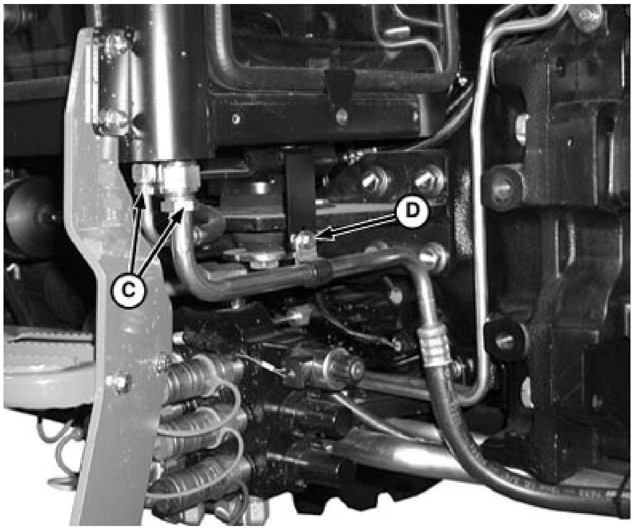
NOTE: Close all openings using caps and plugs.

12. Disconnect air conditioning lines (C) and remove clamp (D). Close all openings using caps and plugs.

A—Cap Screw (2 used)
B—Right-Hand Side Crop Guard
C—Air Conditioning Line (2 used)
D—Clamp



LV10897 –UN–06OCT04



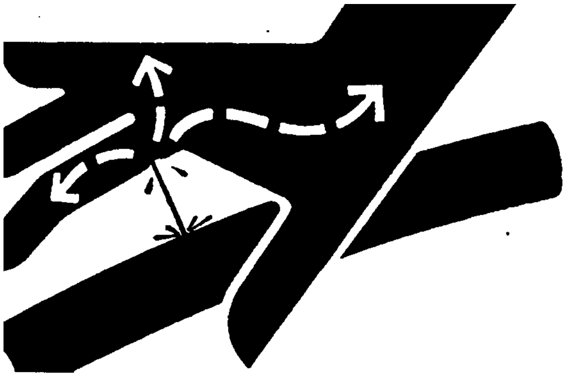
LV10898 –UN–06OCT04

Continued on next page

JG31785,00003CF –19–01FEB05–6/23

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

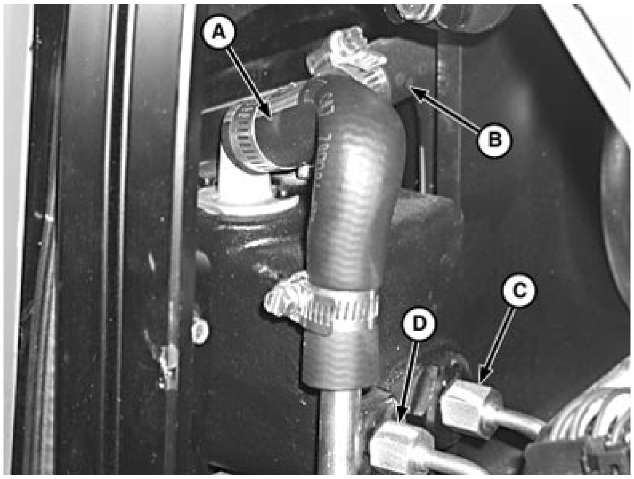


X9811 –UN–23AUG88

13. Disconnect brake valve hoses (A and B). Close all openings using caps and plugs.

14. Disconnect brake valve lines (C and D). Close all openings using caps and plugs.

15. Remove two brake line support clamps from cab fire wall.



LV12241 –UN–15FEB05

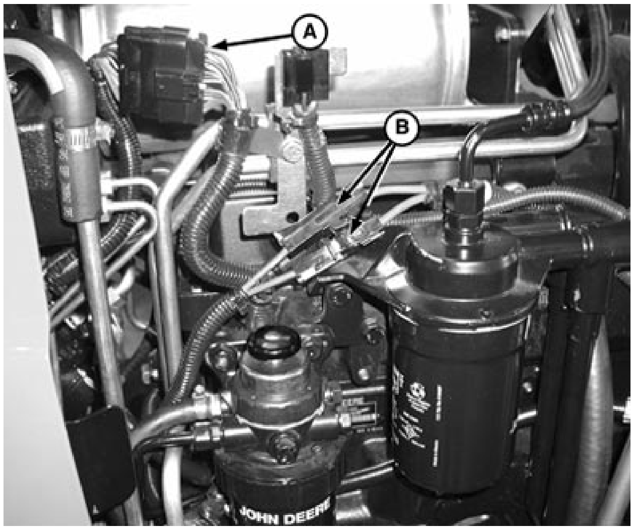
A—Brake Valve Hose
B—Brake Valve Hose
C—Brake Valve Line
D—Brake Valve Line

Continued on next page

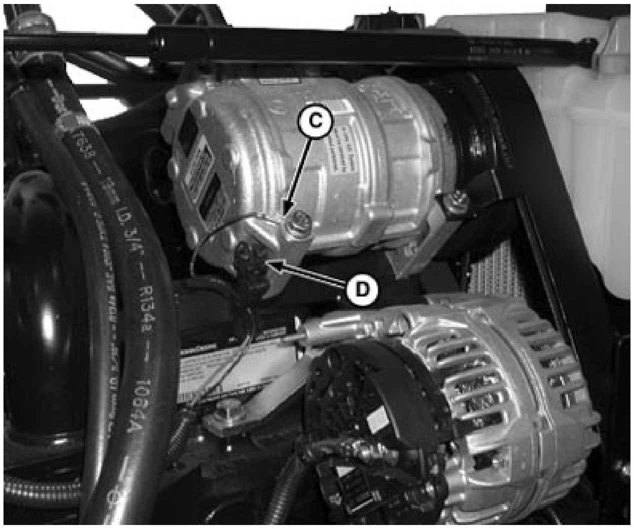
16. Disconnect main wiring harness connectors (A and B).

17. Disconnect A/C compressor ground wire (C) and connector (D).

A—Main Wiring Harness Connector
B—Wiring Harness Connectors (2 used)
C—Ground Wire
D—Connector



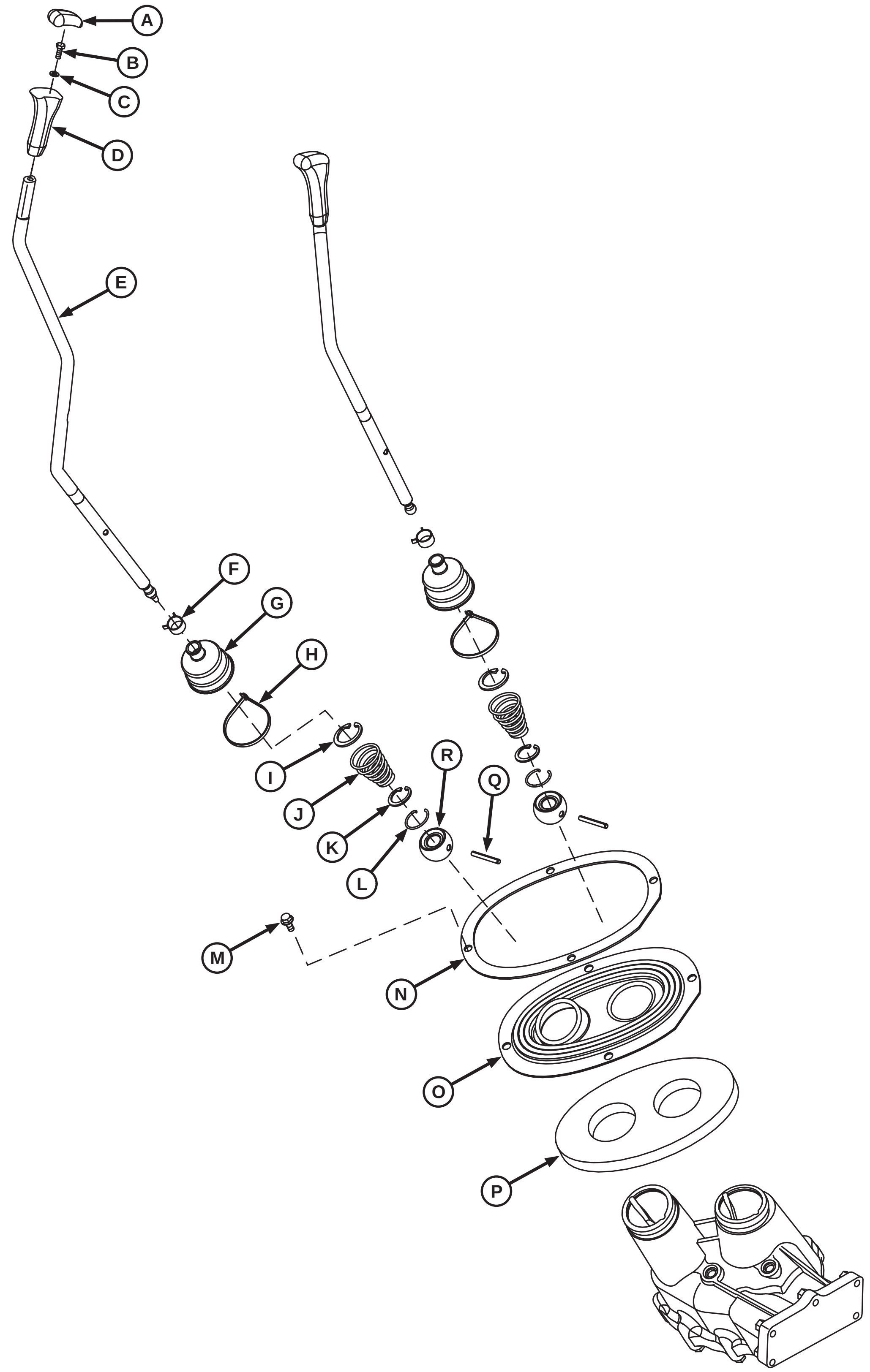
LV10901 –UN–06OCT04



LV10902 –UN–06OCT04

Continued on next page

JG31785,00003CF –19–01FEB05–8/23


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R

LV7028 –UN–28SEP01

Continued on next page

A—Cap
B—Cap Screw
C—Washer
D—Knob
E—Gear Shift Lever
F—Spring Clip
G—Rubber Boot
H—Nylon Tie
I—Internal Snap Ring
J—Spring
K—Internal Snap Ring
L—Retaining Ring
M—Cap Screw (4 used)
N—Retaining Ring
O—Rubber Boot
P—Seal
Q—Spring Pin (2 used)
R—Ball (2 used)

18. Remove gear shift knob assembly (A—D), cut nylon tie (H), remove spring clip (F) and rubber boot (G), spring pin (Q) and ball (R). Remove gear shift lever retaining hardware (I—L) and remove gear shift lever (E).

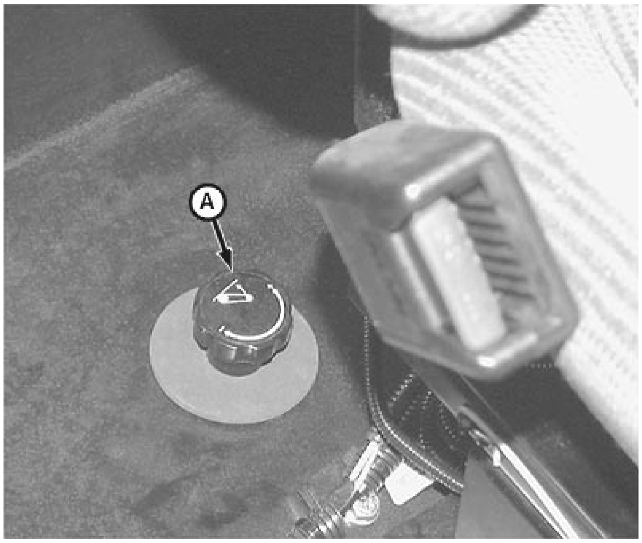
19. Remove range shift lever assembly. (Range shift lever assembly is identical to gear shift assembly.)

20. Remove cap screws (M), retaining ring (N) and rubber boot (O).

JG31785,00003CF –19–01FEB05–10/23

21. Tractors With Mechanical Hitch: Remove rate-of-drop knob (A) located behind right side of cab seat.

A—Rate-of-Drop Knob



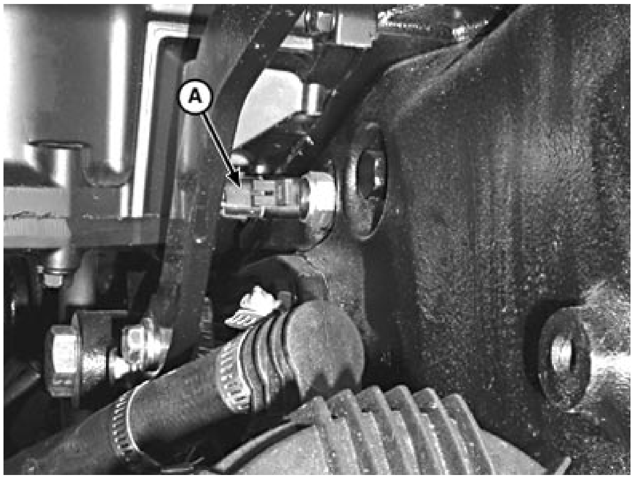
LV7109 –UN–06JUN01

JG31785,00003CF –19–01FEB05–11/23

NOTE: Neutral start switch is located on the right side of transmission near the gear shift housing.

22. Tractors Equipped With SYNCSHUTTLE™ Transmission: Disconnect neutral start switch connector (A).

A—Neutral Start Switch Connector



LV12244 –UN–15FEB05

SYNCSHUTTLE is a trademark of Deere & Company

Continued on next page

JG31785,00003CF –19–01FEB05–12/23

23. Remove cap screw and nut (B) and differential lock lever pedal (A).

24. Remove receiver/dryer clamp (C).

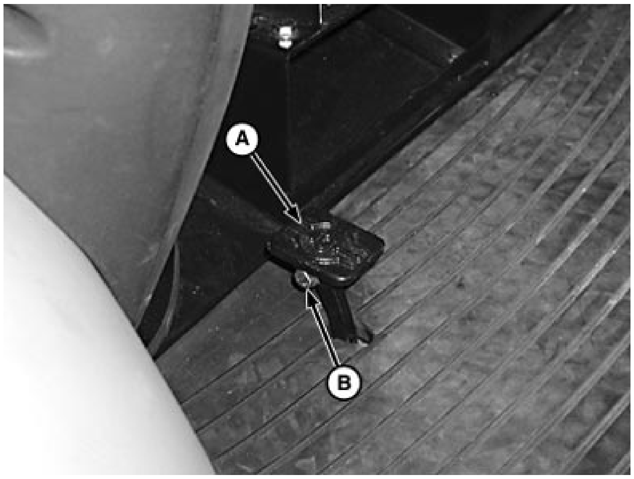
25. Remove cap screws (D) and differential lock lever (E).

26. Disconnect ground lead (F).

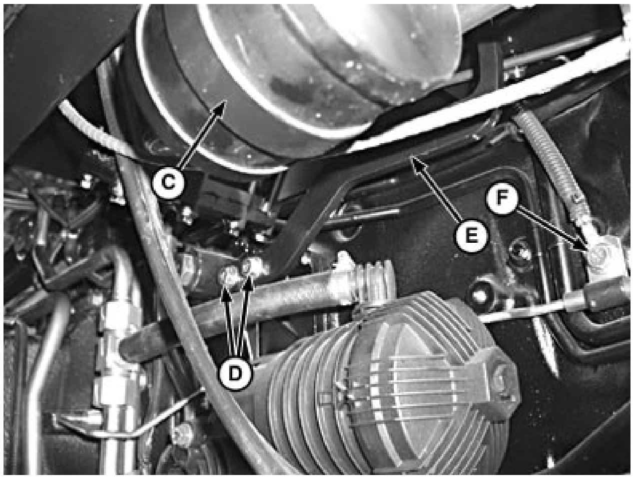
NOTE: Mark position of foot throttle cable jam nut to aid adjustment during installation.

27. Mark position of foot throttle jam nut (H), then loosen. Remove locking spring pin (G) and move foot throttle cable away from linkage and mount.

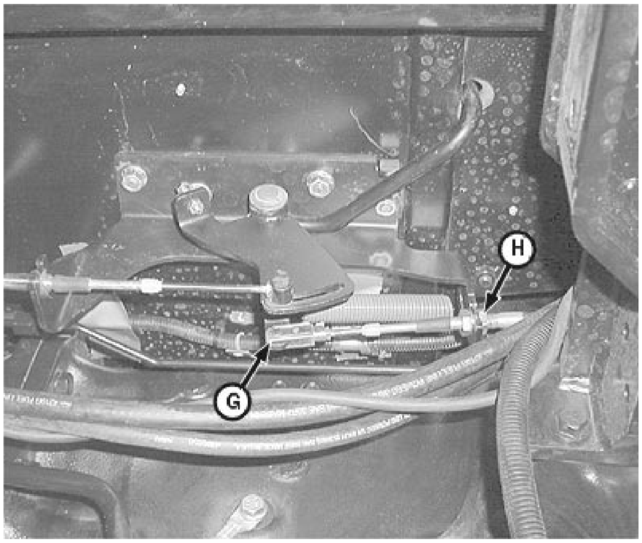
A—Differential Lock Lever Pedal
B—Cap Screw and Nut
C—Receiver/Dryer Clamp
D—Cap Screw (2 used)
E—Differential Lock Lever
F—Ground Lead
G—Spring Locking Pin
H—Jam Nut



LV12242 –UN–15FEB05



LV12243 –UN–15FEB05



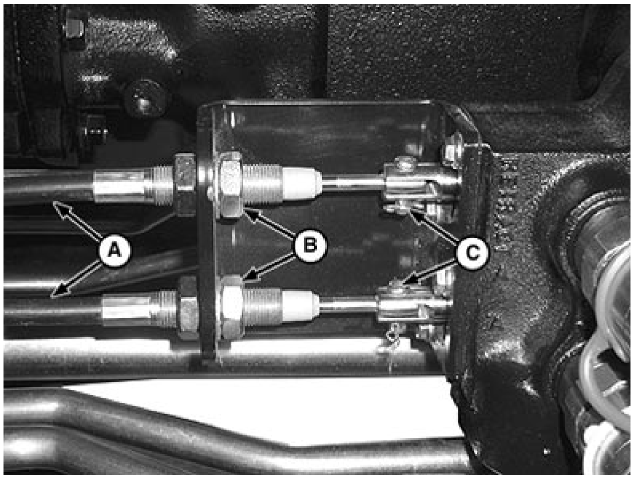
LV7105 –UN–06JUN01

90
15
42

Continued on next page

NOTE: Tractors Equipped With Triple Mid-Mount Control Valve: Disconnect solenoid valve electrical connectors.

28. Tractors Equipped With Mid-Mount Control Valve: Remove clevis pins (C), jam nuts (B) and control cables (A).



LV11446 –UN–01NOV04

A—Control Cables
B—Jam Nuts
C—Clevis Pins

Continued on next page

JG31785,00003CF –19–01FEB05–14/23

NOTE: Depending on tractor options, SCV may have 1, 2 or 3 spools.

29. Loosen cable nut (A). Loosen and remove cable sleeve (B). Unhook SCV control cable from spool (C).

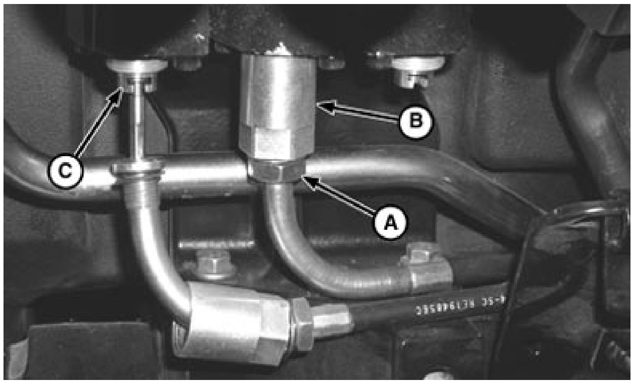
30. Tractors With Mechanical Hitch: Remove locking spring pins (D).

31. Tractors With Mechanical Hitch: Remove rockshaft control cable bracket (E), without disconnecting cables from bracket.

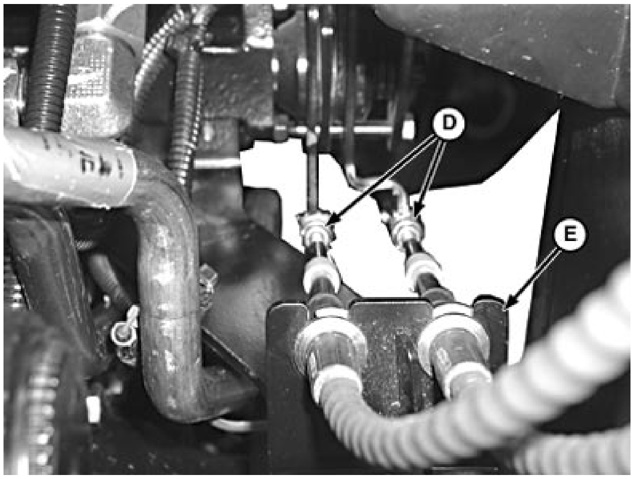
32. Disconnect 7-pin electrical plug connectors (F).

33. Remove fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

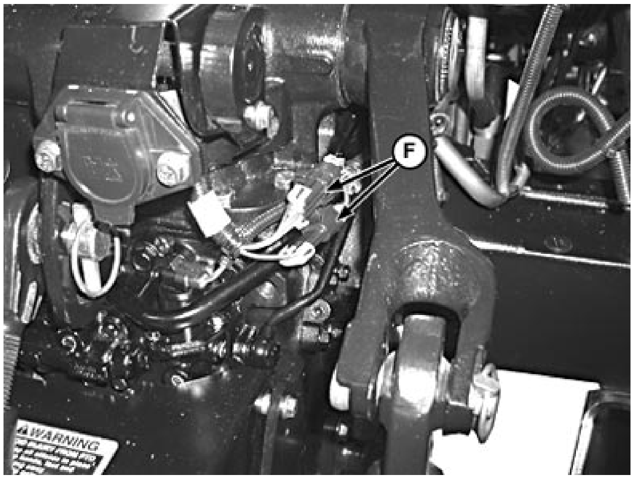
A—Cable Nut
B—Cable Sleeve
C—Spool
D—Locking Spring Pin
E—Rockshaft Control Cable Bracket
F—7-Pin Electrical Plug Connectors



LV10889 –UN–07OCT04



LV12245 –UN–15FEB05



LV12246 –UN–15FEB05

Continued on next page

34. POWRREVERSER Transmission Without EH PTO and SYNCSHUTTLE Transmission: Disconnect PTO clutch cable (A) from lever.

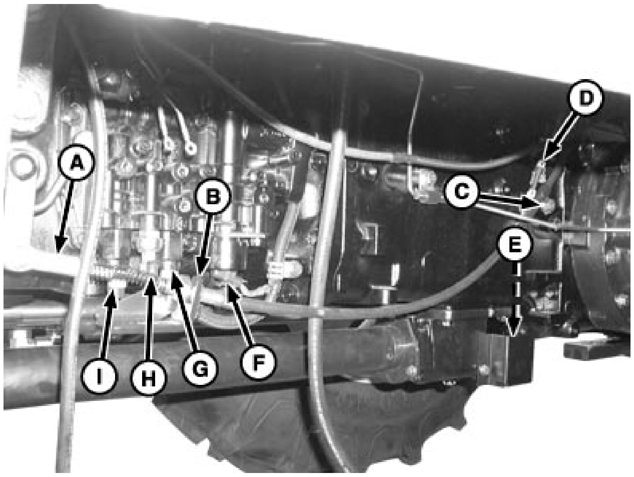
35. POWRREVERSER Transmission Without EH PTO and SYNCSHUTTLE Transmission: Remove cable from bracket (B). Remove cable-to-transmission case clamp (C).

NOTE: POWRREVERSER Transmission Without EH PTO and SYNCSHUTTLE Transmission: Loosen bracket (B) mounting cap screws to remove oil pressure sensor connector (H).

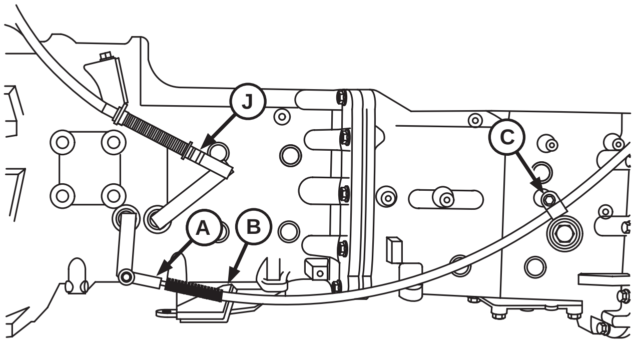
36. Tractors Equipped With POWRREVERSER Transmission: Disconnect wire connectors from components (D—I).

37. Tractors Without POWRREVERSER Transmission: Disconnect traction clutch cable (J) from clutch lever. Remove retaining clip and cable from bracket.

38. Tractors Without POWRREVERSER Transmission: Disconnect ground lead from left side of transmission case.



Tractors With POWRREVERSER™ Transmission.



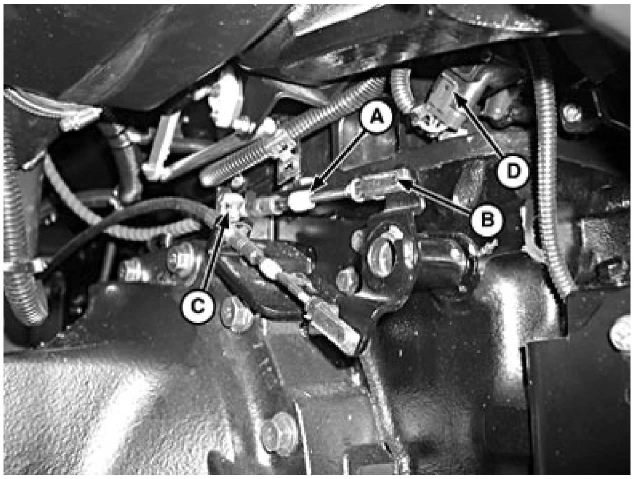
Tractors Without POWRREVERSER Transmission.

A—PTO Clutch Cable
B—PTO Clutch Cable Bracket
C—Cable-to-Transmission Case Clamp
D—Wheel Speed Sensor (POWRREVERSER Equipped)
E—MFWD Solenoid (MFWD Equipped)
F—Clutch Enable Valve Solenoid (POWRREVERSER Equipped)
G—Reverse Solenoid (POWRREVERSER Equipped)
H—Oil Pressure Sensor (POWRREVERSER Equipped)
I—Forward Solenoid (POWRREVERSER Equipped)
J—Traction Clutch Cable

Continued on next page

39. Tractors Equipped With 540/540E or 540/1000 PTO: Remove spring locking pin (B) and retaining clip (C). Move PTO control cable (A) away from bracket.

40. Disconnect wire connector (D).

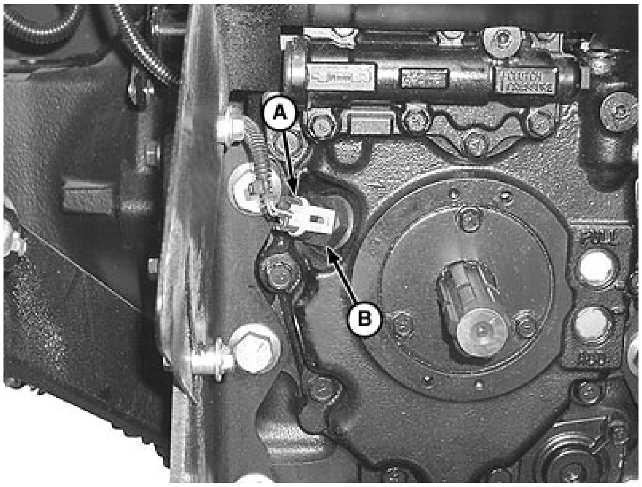


LV12247 –UN–15FEB05

A—PTO Control Cable
B—Locking Spring Pin
C—Retaining Clip
D—Wire Connector

JG31785,00003CF –19–01FEB05–17/23

41. Tractors With EH PTO: Disconnect PTO speed sensor wire connector (A). Follow wire harness forward and remove two harness clamps secured to the bottom of cab.



LV10577 –UN–20SEP04

A—Wire Connector
B—PTO Speed Sensor

Continued on next page

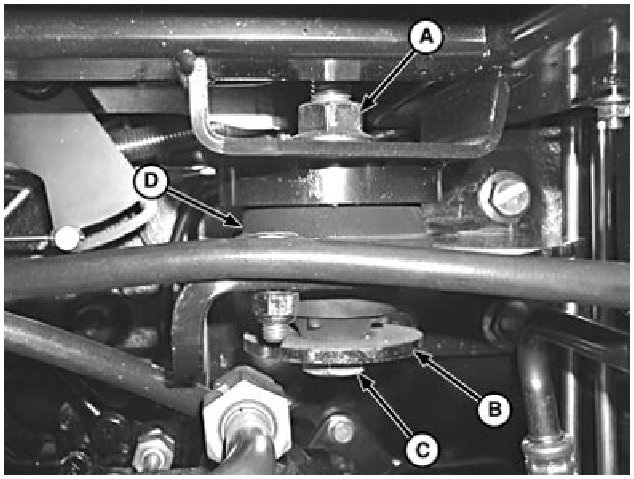
JG31785,00003CF –19–01FEB05–18/23

NOTE: Observe position and location of cab mounting hardware to aid during installation.

42. Lift right and left front corners of cab floor mat and remove floor plugs to access cab mount nuts (A).

43. Remove left and right front cab mount nuts (A). Parts (B—D) will remain in place during cab removal.

A—Nut (2 used)
B—Washer (2 used)
C—Cap Screw (2 used)
D—Isolator (2 used)



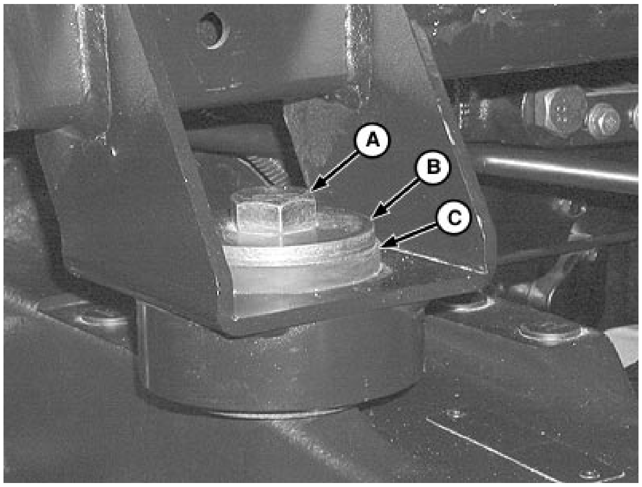
LV12248 –UN–15FEB05

JG31785,00003CF –19–01FEB05–19/23

NOTE: Observe position and location of cab mounting hardware to aid during installation.

44. Remove left- and right-rear cab mount cap screws (A), washers (B) and isolators (C).

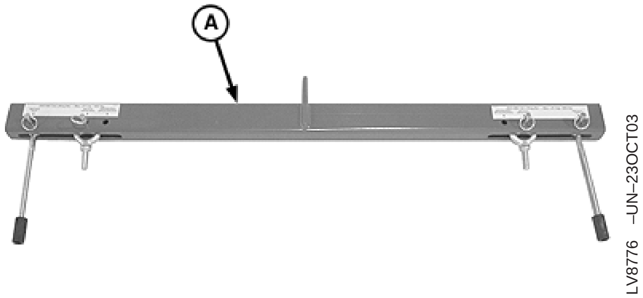
A—Cap Screw (2 used)
B—Washer (2 used)
C—Isolator (2 used)



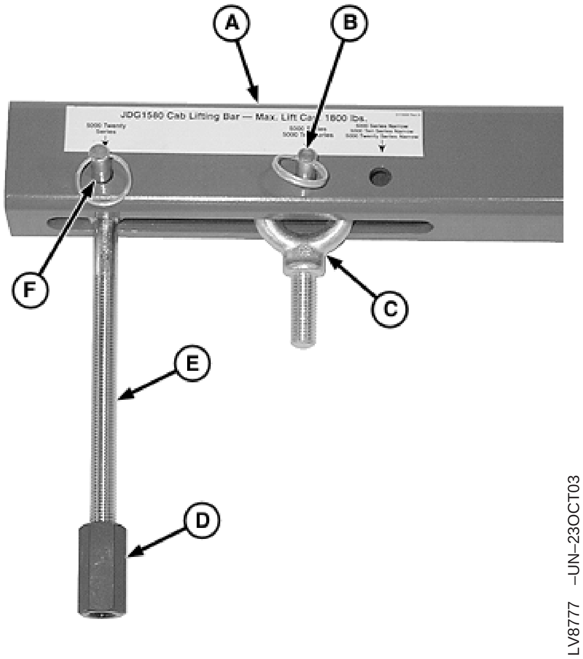
LV8682 –UN–26AUG03

Continued on next page

JG31785,00003CF –19–01FEB05–20/23



LV8776 –UN–23OCT03



LV8777 –UN–23OCT03

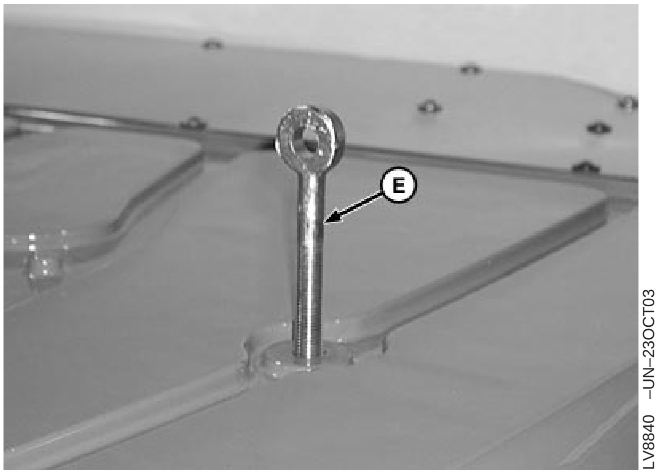
45. Install JDG1580 Cab Lifting Bar (A) to a suitable hoist.

46. Remove retaining lock pin (B), eye bolt (C) and nut (D) from cab lifting bar (A). Repeat this step on opposite end of lifting bar.

IMPORTANT: Make sure not to crack or damage cab outer roof when installing lifting eyes.

47. Remove retaining lock pin (F) and M16 eye bolt (E) from cab lifting bar (A). Repeat this step on opposite end of cab lifting bar.

48. Install two M16 eye bolts (E) in cab roof.



LV8840 –UN–23OCT03

A—Cab Lifting Bar (JDG1580)
B—Retaining Lock Pin (15997)
C—Eye Bolt (5/8 in.) (JDG1580-2)
D—Nut (M16) (JDG1580-4)
E—Eye Bolt (M16) (JDG1833)
F—Retaining Lock Pin (15997)

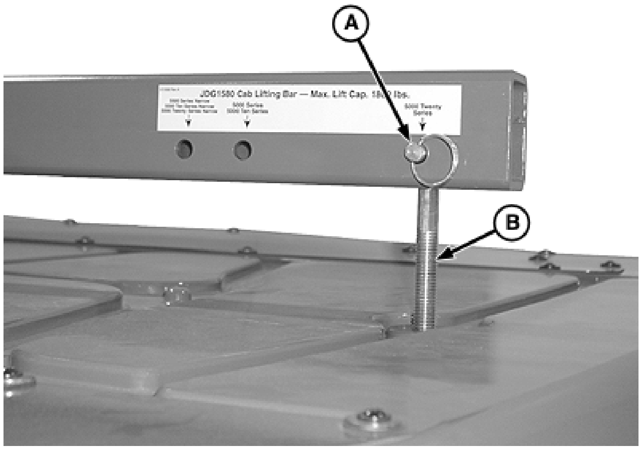
Continued on next page

JG31785,00003CF –19–01FEB05–21/23

49. Position hoist with cab lifting bar over tractor.

50. Attach outboard holes in cab lifting bar to M16 eye bolts (B) using retaining lock pin (A) as shown. Repeat this step for opposite side of cab.

A—Retaining Lock Pin (2 used)
B—Eye Bolt (M16) (2 used)



LV8778 –UN–23OCT03

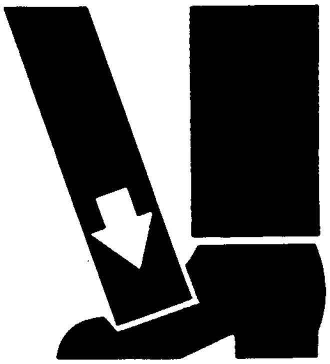
JG31785,00003CF –19–01FEB05–22/23

CAUTION: Use proper lifting equipment. Lifting the cab without using JDG1580 Cab Lifting Bar could cause personal injury.

IMPORTANT: Lift cab slowly! Check all disconnect points to ensure all hoses, lines, wires, cables and linkages have been disconnected and will not bind during cab removal.

51. Raise cab slowly and move from tractor.

52. Lower cab to rest on jack stands or blocks of wood.

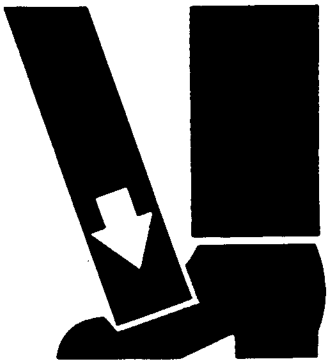


TS226 –UN–23AUG88

LV12249 –UN–15FEB05

JG31785,00003CF –19–01FEB05–23/23

Install Cab



CAUTION: Use proper lifting equipment. Lifting the cab without using JDG1580 Cab Lifting Bar could cause personal injury.

1. Lower cab into position, be sure all hardware is correctly located.

IMPORTANT: Do not pinch or bend hoses, lines, wires, cables or linkages when installing cab.

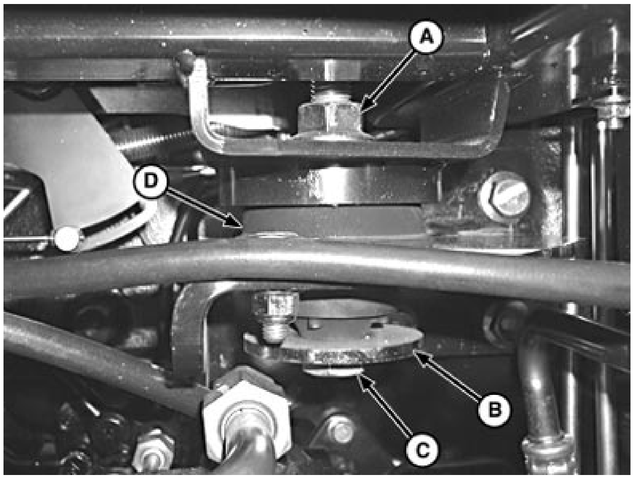
LV12249 –UN–15FEB05

JG31785,00003EA –19–11FEB05–1/22

2. Ensure parts (B—D) are properly placed. Install left- and right-front cab mount nuts (A). Tighten to specification.

Specification	
Front Cab Mount Nut—Torque	350 N•m (258 lb-ft)

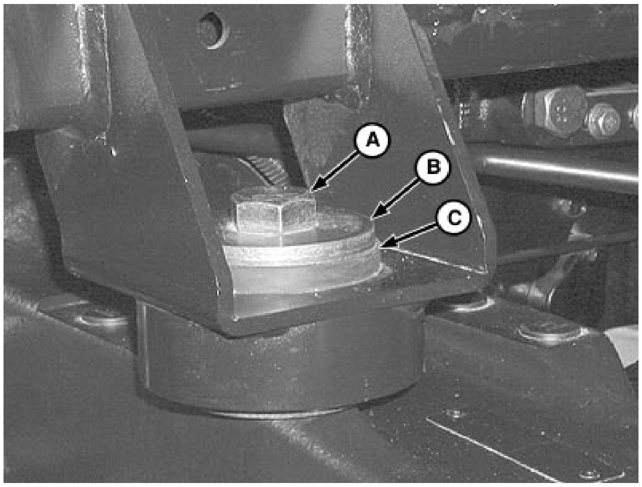
A—Nut (2 used)
B—Washer (2 used)
C—Cap Screw (2 used)
D—Isolator (2 used)



Continued on next page

JG31785,00003EA –19–11FEB05–2/22

3. Install left- and right-rear cab mount cap screws (A), washers (B) and isolators (C). Tighten to specification.



Specification

Rear Cab Mount Cap Screw—
Torque .... 220 N•m (185 ft-lb)

4. Install floor plugs and front corners of floor mat.

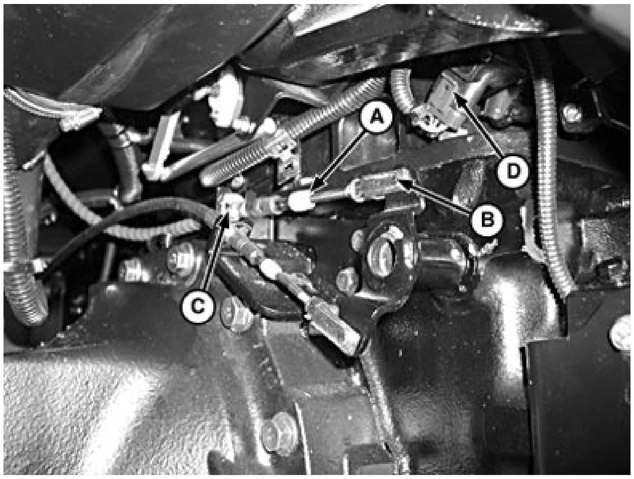
5. Remove hoist, cab lifting bar and M16 eye bolts from cab.

6. Install two M16 cap screws and seals removed for lifting cab.

A—Cap Screw (2 used)
B—Washer (2 used)
C—Isolator (2 used)

JG31785,00003EA –19–11FEB05–3/22

7. Tractors Equipped With 540/540E or 540/1000 PTO: Install PTO control cable (A), retaining clip (C) and locking spring pin (B).



8. Check PTO control cable adjustment. (SeeReference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197 Section 256, Group 15.)

9. Connect wire connector (D).

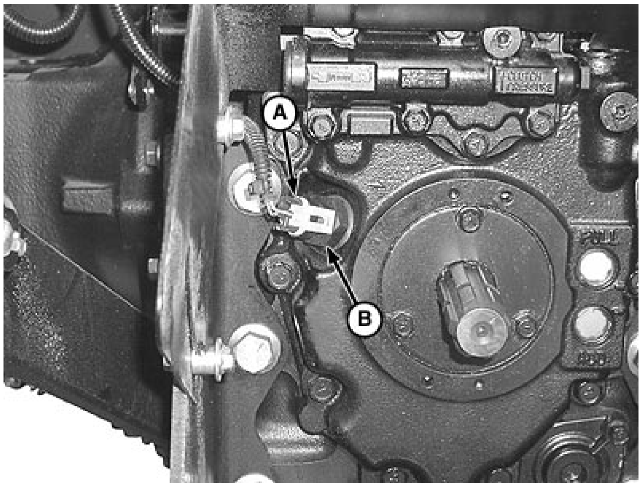
A—PTO Control Cable
B—Locking Spring Pin
C—Retaining Clip
D—Wire Connector

Continued on next page

JG31785,00003EA –19–11FEB05–4/22

10. Tractors With EH PTO: Connect PTO speed sensor wire connector (A). Be sure two wire harness clamps are secured to bottom of cab.

A—Wire Connector
B—PTO Speed Sensor



LV10577 –UN–20SEP04

Continued on next page

JG31785,00003EA –19–11FEB05–5/22

11. Tractors Without POWRREVERSER™ Transmission: Connect ground lead from left side of transmission case.

12. Tractors Without POWRREVERSER Transmission: Connect traction clutch cable (J) to bracket and secure with retaining clip. Connect traction clutch cable to clutch lever.

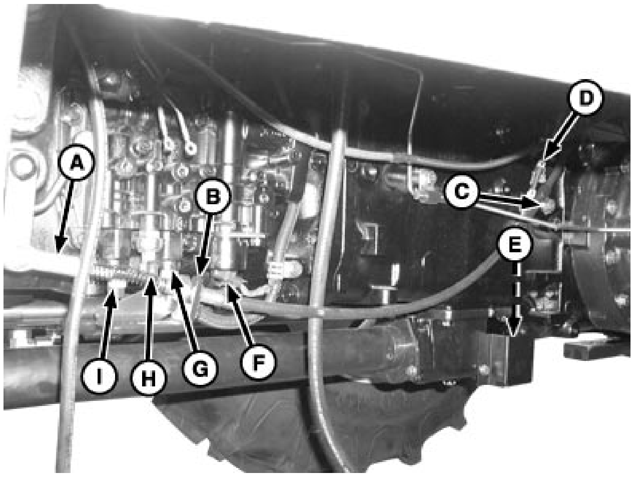
13. Check traction clutch adjustment. (See Reference 256-15-004, PTO Clutch Lever Linkage Adjustment-Isolated Open Operator Station and Cab Tractors (Without Electro-Hydraulic PTO) in TM2197 Section 256, Group 15.)

14. Tractors With POWRREVERSER Transmission: Connect wire connectors for components (D—I).

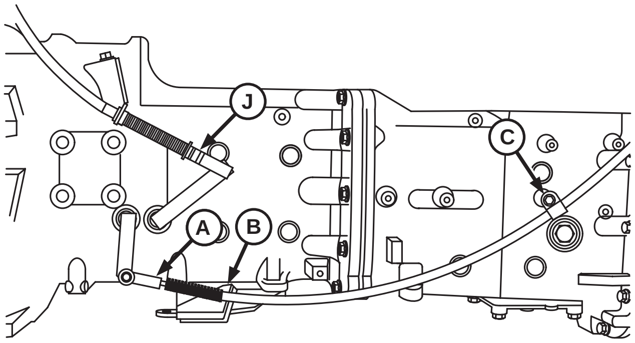
15. POWRREVERSER Transmission Without EH PTO and SYNCSHUTTLE Transmission: Connect PTO clutch cable (A) to bracket (B). Install cable-to-transmission case clamp (C).

16. Connect PTO clutch cable (A) to clutch lever. Check PTO clutch cable adjustment. (See Reference 256-15-004, PTO Clutch Lever Linkage Adjustment-Isolated Open Operator Station and Cab Tractors (Without Electro-Hydraulic PTO) in TM2197 Section 256, Group 15.)

17. Install fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)



Tractors With POWRREVERSER Transmission.



Tractors Without POWRREVERSER Transmission.

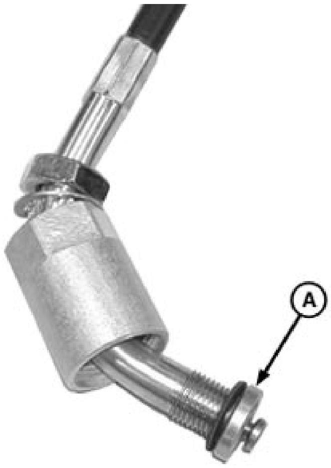
A—PTO Clutch Cable
B—PTO Clutch Cable Bracket
C—Cable-to-Transmission Case Clamp
D—Wheel Speed Sensor (POWRREVERSER Equipped)
E—MFWD Solenoid (MFWD Equipped)
F—Clutch Enable Valve Solenoid (POWRREVERSER Equipped)
G—Reverse Solenoid (POWRREVERSER Equipped)
H—Oil Pressure Sensor (POWRREVERSER Equipped)
I—Forward Solenoid (POWRREVERSER Equipped)
J—Traction Clutch Cable

POWRREVERSER is a trademark of Deere & Company

Continued on next page

18. Before installing SCV cables, inspect retaining nut (A). If loose, apply high strength Loctite 271 and tighten securely without damaging OD of retaining nut.

A—Retaining Nut



LV12307 –UN–17FEB05

Continued on next page

JG31785,00003EA –19–11FEB05–7/22

NOTE: Depending on tractor options, SCV may have 1, 2 or 3 spools.

19. Connect SCV control cable to spool (C). Install cable sleeve (B). Tighten to specification.

Specification

Cable Sleeve—Torque .... 16—19 N•m (144—168 lb-in.)

20. Install cable nut (A). Tighten to specification.

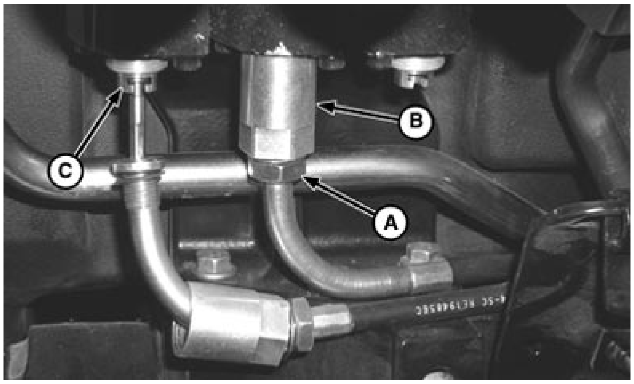
Specification

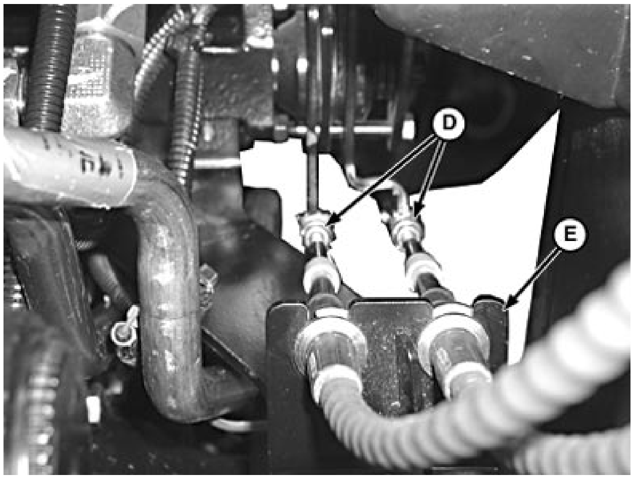
Cable Nut—Torque.................................... 16—19 N•m (144—168 lb-in.)

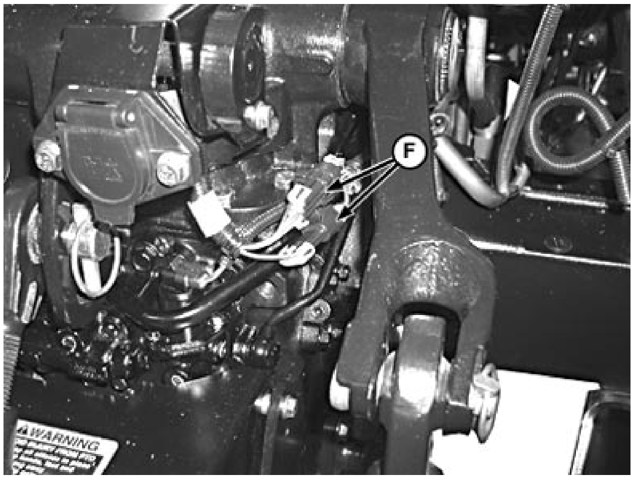
21. Tractors Equipped With Mechanical Hitch: Install rockshaft control cable mounting bracket (E). Connect rockshaft control cables using spring locking pins (D).

22. Connect 7-pin electrical plug connectors (F).

A—Cable Nut
B—Cable Sleeve
C—Spool
D—Locking Spring Pin
E—Rockshaft Control Cable Bracket
F—7-Pin Electrical Plug Connectors



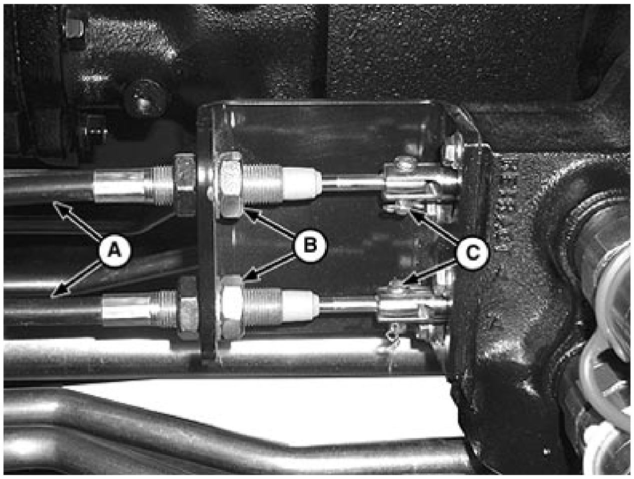




Continued on next page JG31785,00003EA –19–11FEB05–8/22

NOTE: Tractors Equipped With Triple Mid-Mount Control Valve: Connect solenoid valve wire connectors.

23. Install Mid-Mount control cables (A), jam nuts (B) and clevis pins (C). Check cable adjustment. (See Reference 270-15-013, Mid-Mount Control Valve Cable Adjustment in TM2197 Section 270, Group 15.)



LV11446 –UN–01NOV04

A—Mid-Mount Control Cables (2 used)
B—Jam Nut (2 used)
C—Clevis Pin (2 used)

Continued on next page

JG31785,00003EA –19–11FEB05–9/22

24. Install foot throttle cable on mount and tighten jam nut (H). Install spring locking pin (G) through cable end and throttle linkage.

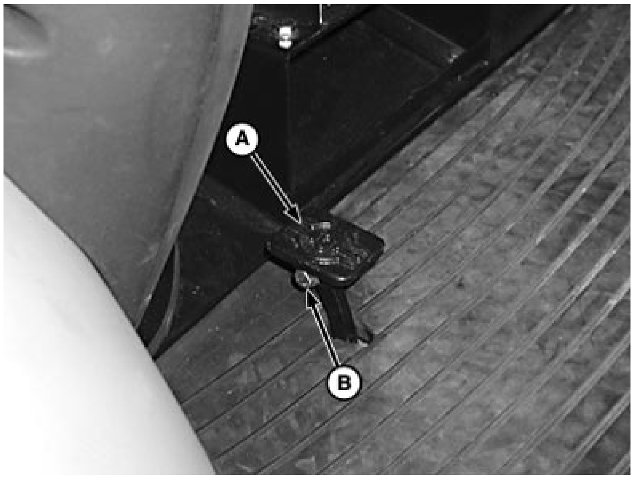
25. Connect ground lead (F).

26. Install differential lock lever (E) with cap screws (D).

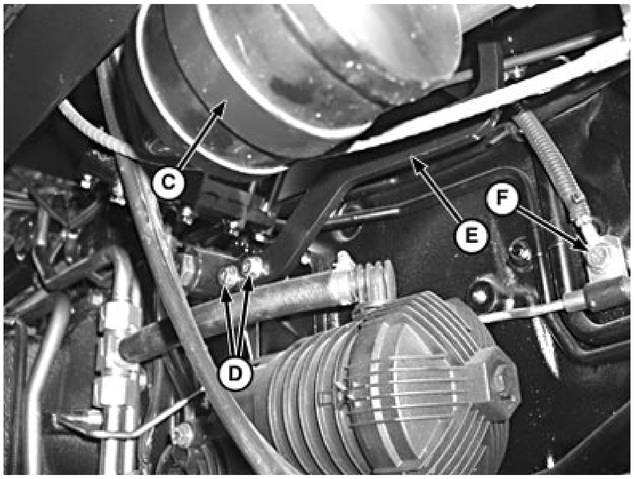
27. Install receiver/dryer with clamp (C).

28. Install differential lock lever pedal (A) with cap screw and nut (B).

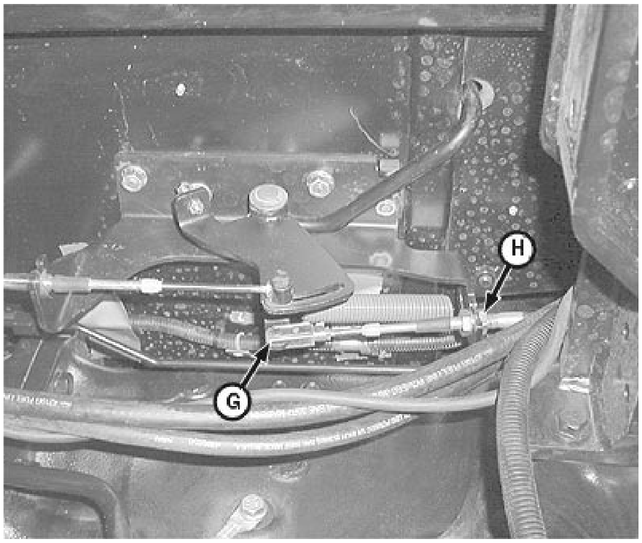
A—Differential Lock Lever Pedal
B—Cap Screw and Nut
C—Receiver/Dryer Clamp
D—Cap Screw (2 used)
E—Differential Lock Lever
F—Ground Lead
G—Spring Locking Pin
H—Jam Nut



LV12242 –UN–15FEB05



LV12243 –UN–15FEB05

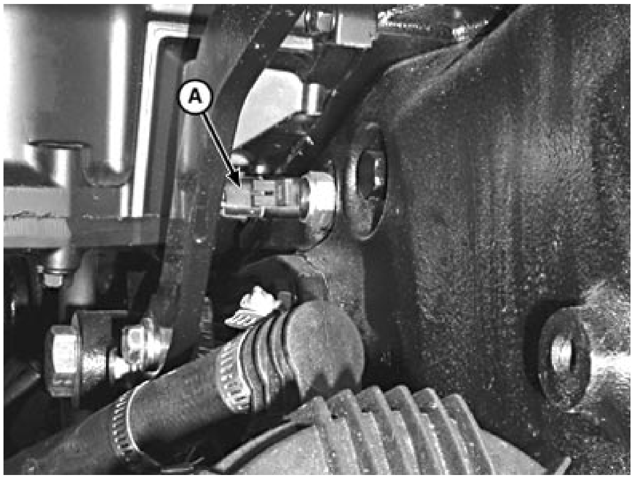


LV7105 –UN–06JUN01

Continued on next page

29. Tractors With SYNCSHUTTLE™ Transmission: Connect neutral start switch connector (A).

A—Neutral Start Switch Connector



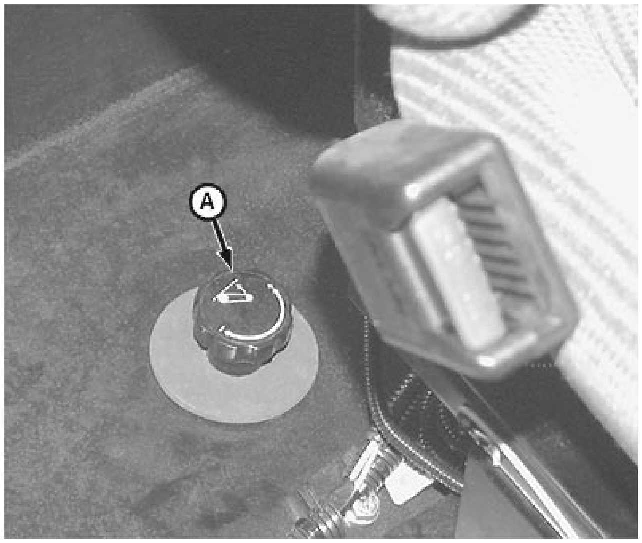
LV12244 –UN–15FEB05

SYNCSHUTTLE is a trademark of Deere & Company

JG31785,00003EA –19–11FEB05–11/22

30. Tractors With Mechanical Hitch: Install rate-of-drop knob (A).

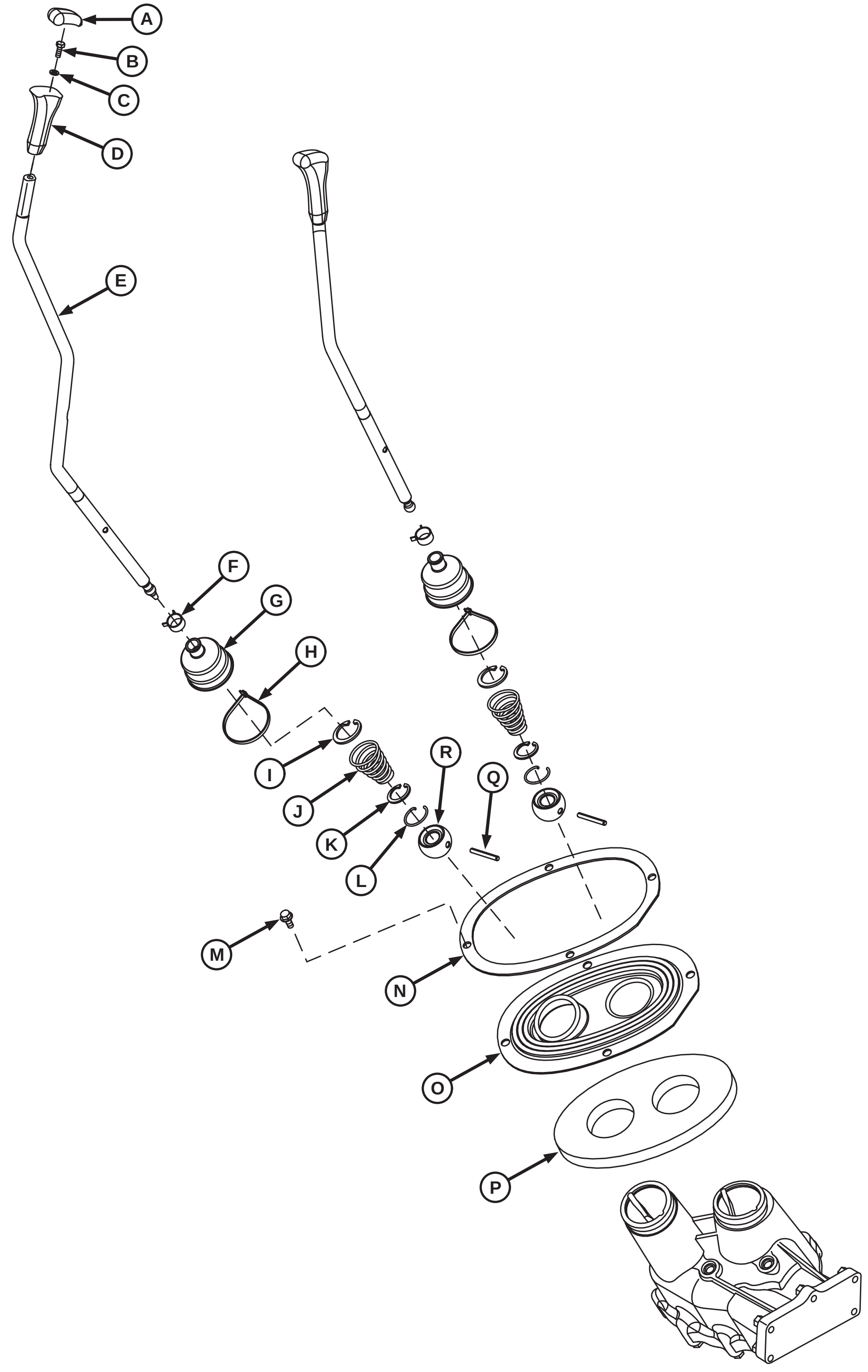
A—Rate-of-Drop Knob



LV7109 –UN–06JUN01

Continued on next page

JG31785,00003EA –19–11FEB05–12/22


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R

LV7028 –UN–28SEP01

Continued on next page

A—Cap
B—Cap Screw
C—Washer
D—Knob
E—Gear Shift Lever
F—Spring Clip
G—Rubber Boot
H—Nylon Tie
I—Internal Snap Ring
J—Spring
K—Internal Snap Ring
L—Retaining Ring
M—Cap Screw (4 used)
N—Retaining Ring
O—Rubber Boot
P—Seal
Q—Spring Pin (2 used)
R—Ball (2 used)

NOTE: Connect EH Hi/Lo switch connector, if equipped.

31. Install rubber boot (O), retaining ring (N) and cap screws (M).

32. Install gear shift lever (E), retaining hardware (I—L), ball (R), spring pin (Q), rubber boot (G) and spring clip (F). Install new nylon tie (H) around rubber boot (G) and install knob assembly (A—D).

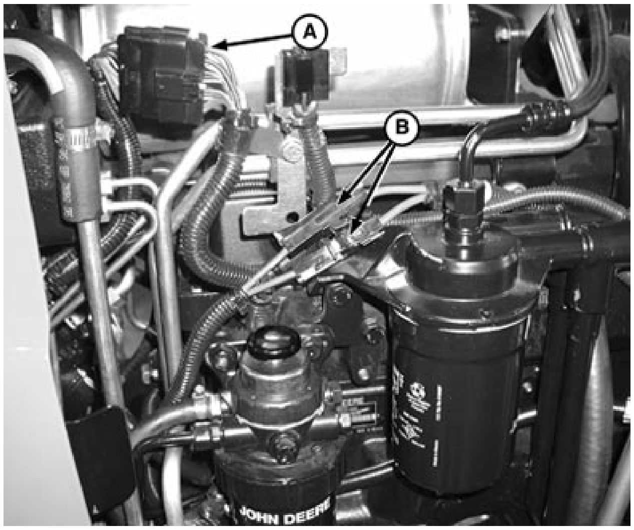
33. Install range shift lever assembly. (Range shift lever assembly installation is identical to gear shift assembly.)

JG31785,00003EA –19–11FEB05–14/22

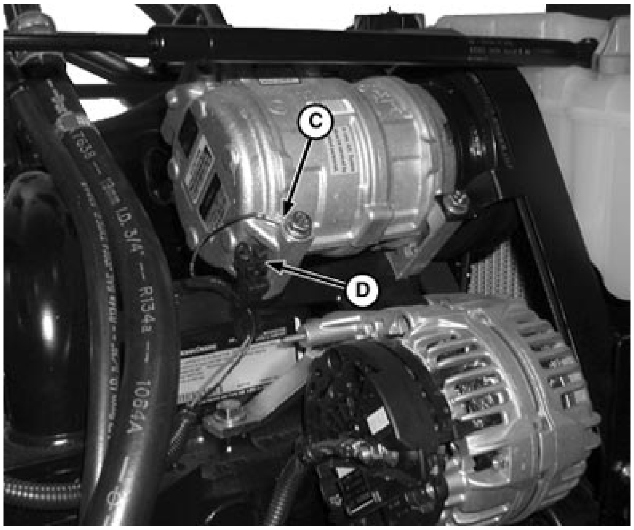
34. Connect main wiring harness connectors (A and B).

35. Connect A/C compressor ground wire (C) and connector (D).

A—Main Wiring Harness Connector
B—Wiring Harness Connectors (2 used)
C—Ground Wire
D—Connector



LV10901 –UN–06OCT04



LV10902 –UN–06OCT04

Continued on next page

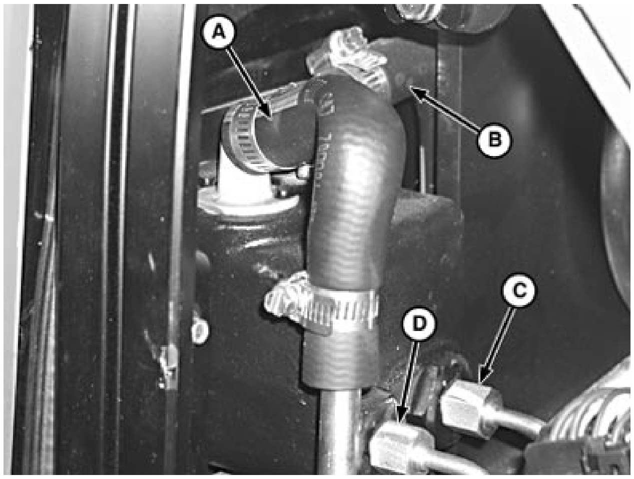
JG31785,00003EA –19–11FEB05–15/22

36. Connect brake valve hoses (A and B).

NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

37. Connect brake valve lines (C and D).

38. Install two brake line support clamps to cab fire wall.



A—Brake Valve Hose
B—Brake Valve Hose
C—Brake Valve Line
D—Brake Valve Line

JG31785,00003EA –19–11FEB05–16/22

NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

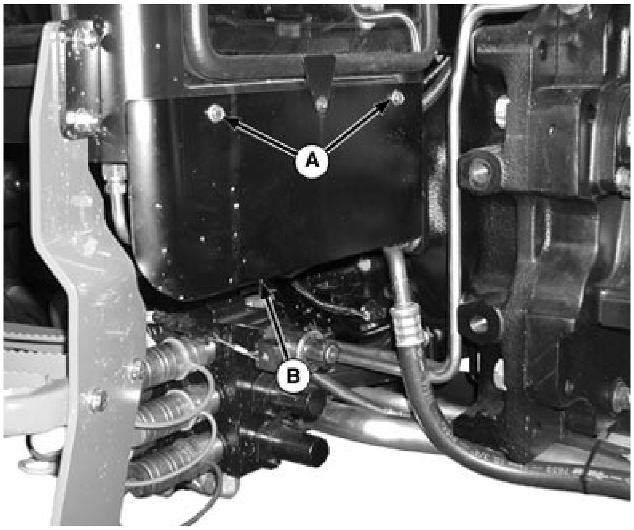
39. Apply a small amount of refrigeration oil on O-rings before connecting A/C lines.

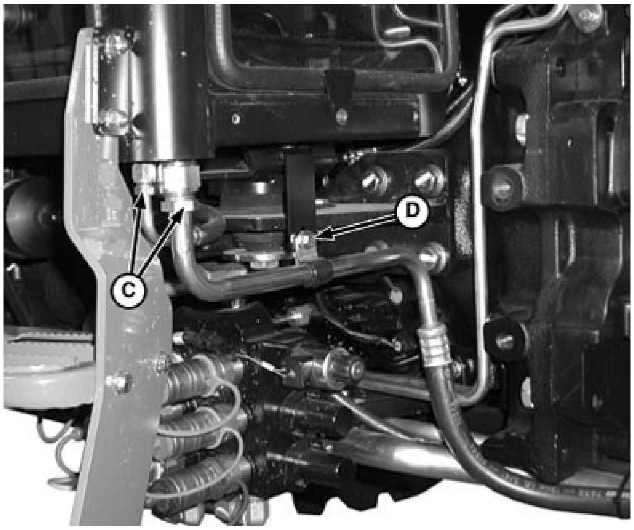
40. Connect air conditioning lines (C) and secure with clamp (D). Tighten A/C lines to specification.

Specification

Cab A/C Lines—Torque .... 45 N•m (33 lb-ft)

41. Install crop guard (B) with cap screws (A).





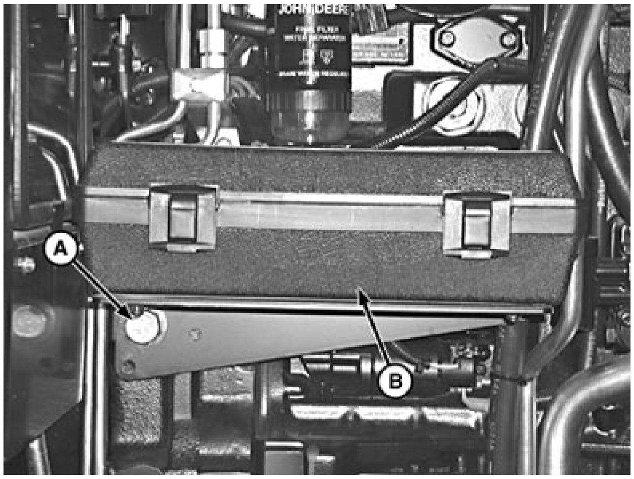
A—Cap Screw (2 used)
B—Right-Hand Side Crop Guard
C—Air Conditioning Line (2 used)
D—Clamp

Continued on next page

JG31785,00003EA –19–11FEB05–17/22

42. Install toolbox (B) with cap screw (A), if equipped.

A—Cap Screw
B—Optional Toolbox



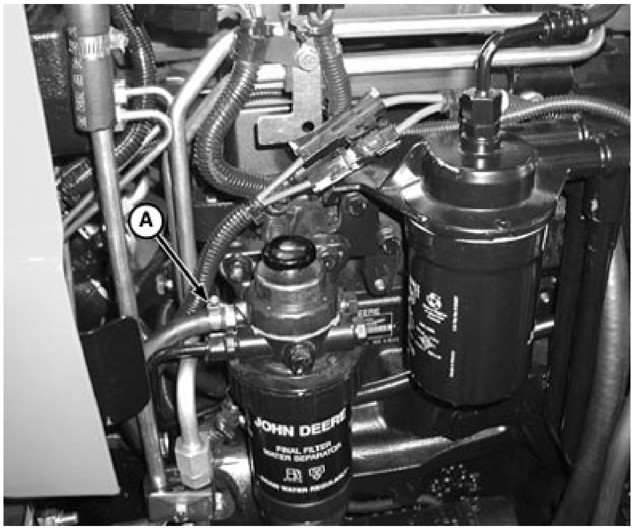
LV12240 –UN–15FEB05

Continued on next page

JG31785,00003EA –19–11FEB05–18/22

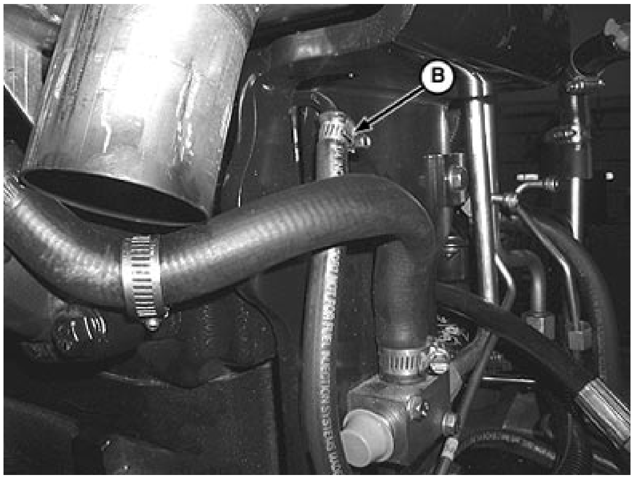
43. Connect fuel supply and return hoses (A and B).

A—Fuel Supply Hose
B—Fuel Return Hose


A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR

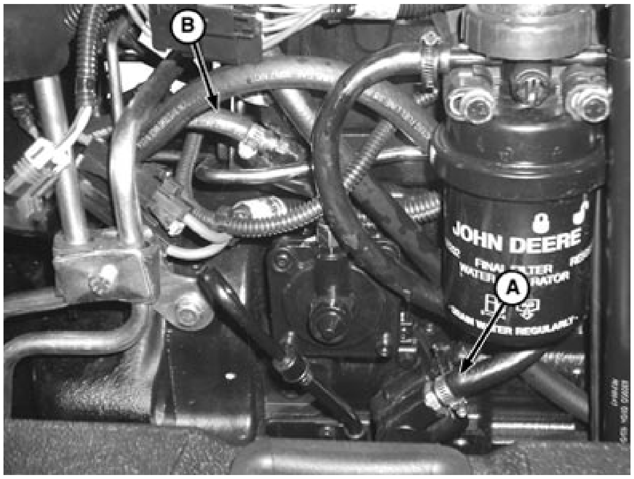
LV10899 –UN–06OCT04

4-Cylinder Supply Hose



LV11307 –UN–20OCT04

4-Cylinder Return Hose


B
A
JOHN DEERE
FINAL FILTER
WATER SEPARATOR

LV11306 –UN–20OCT04

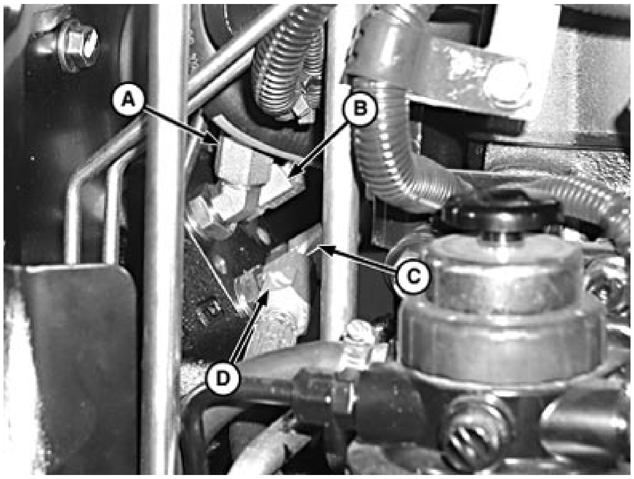
5-Cylinder Hoses

Continued on next page

JG31785,00003EA –19–11FEB05–19/22

NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

44. Connect steering valve hydraulic hoses (A—D).



A—Hydraulic Hose
B—Hydraulic Hose
C—Hydraulic Hose
D—Hydraulic Hose

Continued on next page

JG31785,00003EA –19–11FEB05–20/22

45. Connect heater hoses (D) using hose clamps (C).

46. Install left-hand side crop guard (B) with cap screws (A).

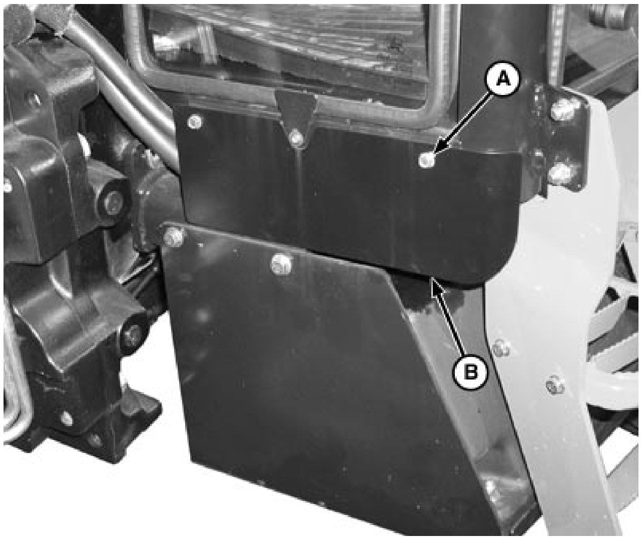
47. Fill radiator with coolant.

48. Fill fuel tank.

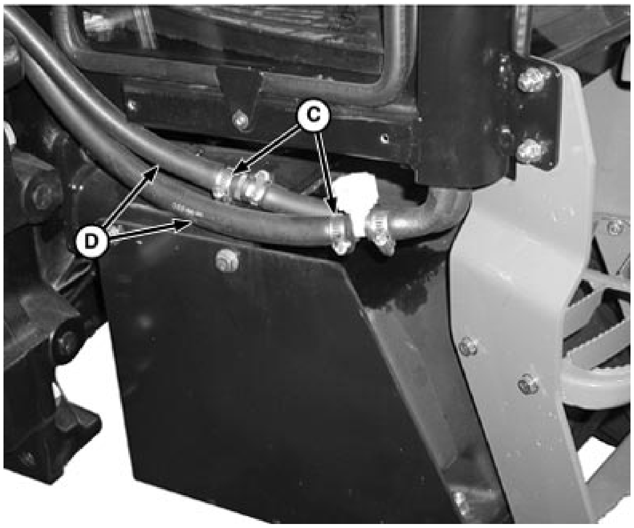
49. Connect battery, negative (—) cable last.

50. Charge air conditioning system. (See Charge Air Conditioning System in Section 90, Group 20.)

A—Cap Screw (2 used)
B—Left-Hand Side Crop Guard
C—Hose Clamp (2 used)
D—Heater Hoses



LV10905 –UN–13OCT04



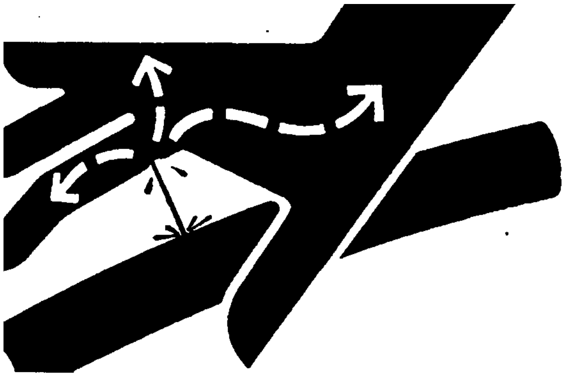
LV10906 –UN–06OCT04

Continued on next page

JG31785,00003EA –19–11FEB05–21/22

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



51. Start engine and check for hydraulic leaks. Note any leaks and make repairs as necessary.

52. Run engine at proper operating temperature. Check for coolant leaks. Adjust coolant level in recovery tank.

53. Adjust fast and slow idle speeds. See procedure in CTM104 or CTM301.

54. Check hydraulic oil level. (See Transmission and Hydraulic Oil in Section 10, Group 20.)

55. Bleed brakes. (See Reference 260-15-009, Bleed Rear Brakes in TM2197 Section 260, Group 15.)

56. Tractors With Mechanical Hitch: Check rockshaft cable adjustment. (See Reference 213-70C-001, Rear Mechanical Hitch System Diagnosis in TM2197 Section 270, Group 15.)

JG31785,00003EA –19–11FEB05–22/22

Group 16
Isolated Open Operator Station Components

Other Material

Number	Name	Use
PM38654 (U.S.) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of SCV cable before tightening retaining nut

LOCTITE is a trademark of Loctite Corp.

JG31785,0000414 –19–18FEB05–1/1

Specifications

Item	Measurement	Specification
Isolated Open Operator Station Mounting Cap Screw	Torque	80 N•m (59 lb-ft)

OUO1083,00006C0 –19–30JUL04–1/1

Remove Isolated Open Operator Station

1. Park tractor on a flat, level surface. Block wheels, front and rear.

2. Disconnect battery, negative (—) cable first.

3. Remove hood from tractor. (See Remove and Install Hood in Section 80, Group 25.)

4. Remove fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

Continued on next page

OUO1083,00006C1 –19–30JUL04–1/12

5. Tractors Without EH Hitch: Remove rate-of-drop knob (A).

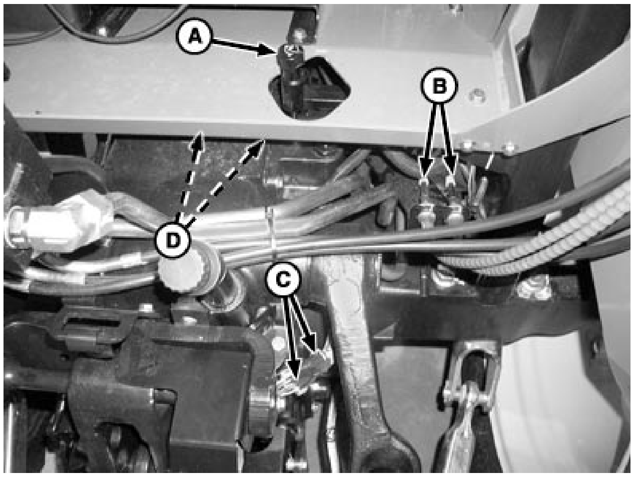
NOTE: Cut tie straps as necessary as components are disconnected.

6. Disconnect wire connectors and sensors (C—I).

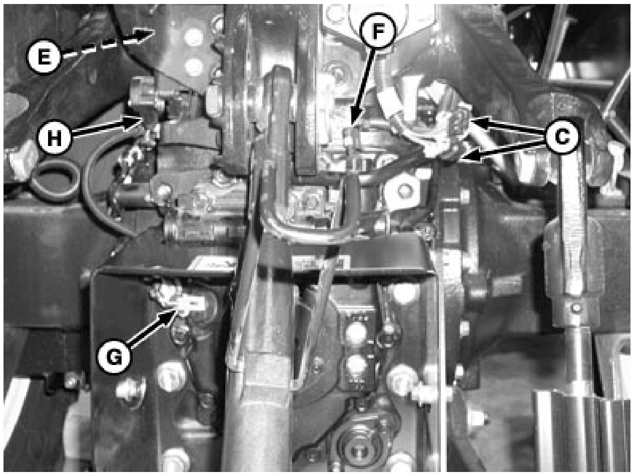
NOTE: Tag cables for ease of installation.

7. Disconnect and remove rockshaft control cables (B), if equipped.

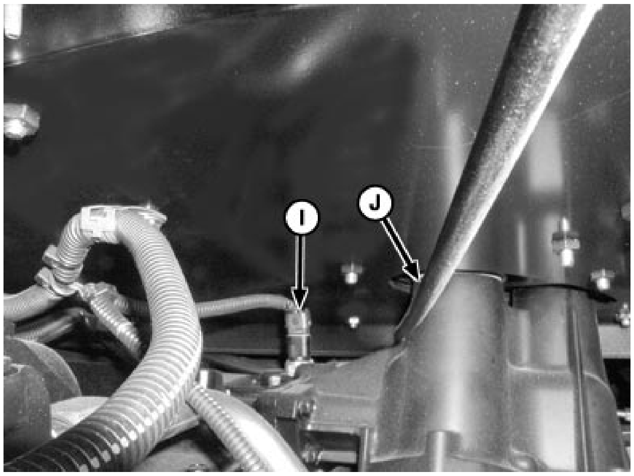
A—Rate-of-Drop Knob
B—Rockshaft Control Cables
C—7-Pin Electrical Outlet Wire Connectors
D—EH Hitch Connectors (Optional)
E—EH Hitch Feedback Sensor (Optional)
F— EH PTO Connector (Optional)
G—EH PTO Speed Sensor (Optional)
H—EH Hitch Draft Depth Sensor (Optional)
I—Electric Park Sensor (POWRREVERSER™ Equipped)
J—Shift Lever Housing



Manual Hydraulic Hitch Shown



EH PTO Connectors



Park Sensor

POWRREVERSER is a trademark of Deere & Company

Continued on next page

OUO1083,00006C1 –19–30JUL04–2/12

8. Disconnect cables (A) from rear SCV.

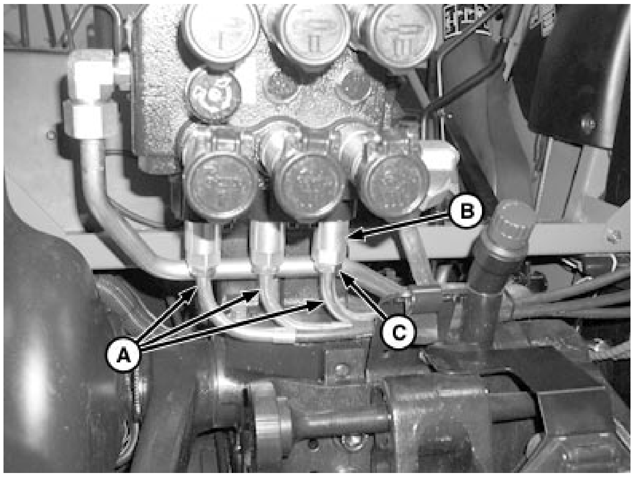
   - Unthread jam nut (C).
   - Unthread cable retainer (B) and remove cable from valve.

9. Pull SCV cables away from valve.

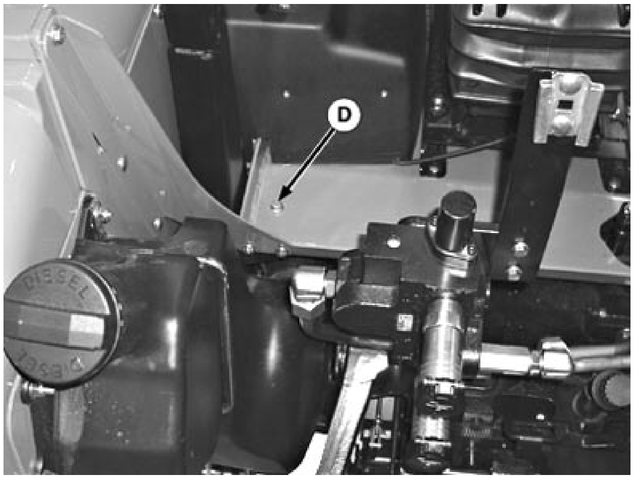
NOTE: Observe location of platform mount hardware to aid during assembly.

10. Remove rear operator station mount cap screws and nuts (D).

11. Raise rear of isolated open operator station slightly and place blocks between rear case and operator station. Remove ROLL-GARD™. (See Remove and Install ROLL-GARD—Isolated Open Operator Station in Section 90, Group 10.)



LV9918 –UN–20AUG04



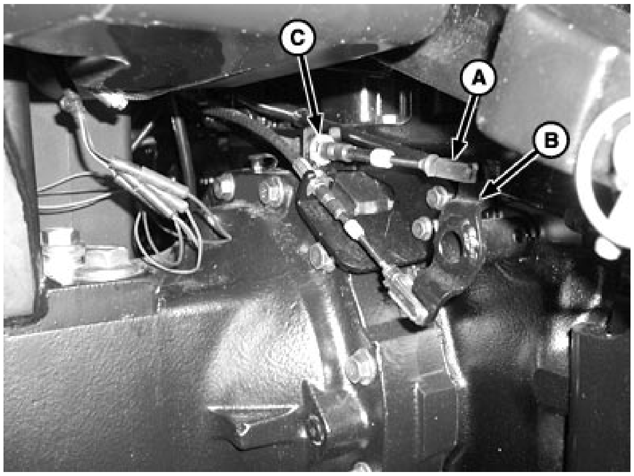
LV12351 –UN–01MAR05

A—Rear SCV Cables
B—Cable Retainer
C—Jam Nut
D—Cap Screw and Nut (2 used)

ROLL-GARD is a trademark of Deere & Company

OUO1083,00006C1 –19–30JUL04–3/12

12. Tractors Equipped With 540/540E: Disconnect 540/540E control cable (A) from bellcrank (B). Remove retaining clip (C) from mounting bracket and remove 540/540E control cable from support bracket.



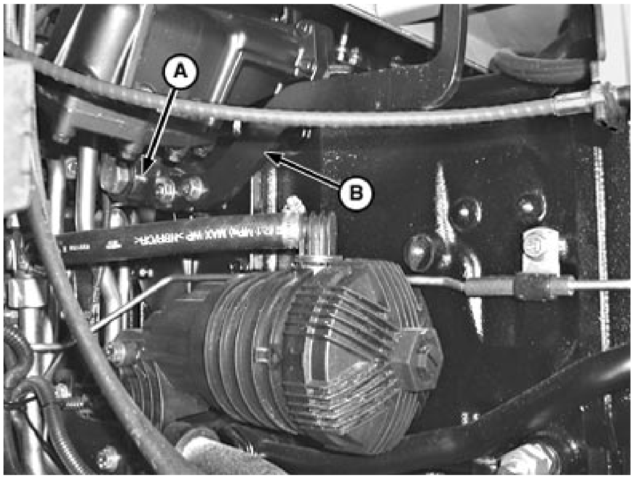
LV9919 –UN–19AUG04

A—540/540E Control Cable
B—Bellcrank
C—Retaining Clip

Continued on next page

OUO1083,00006C1 –19–30JUL04–4/12

13. Remove differential lock pedal pad from differential lock pedal. Remove differential lock pedal (B) from differential lock lever (A).



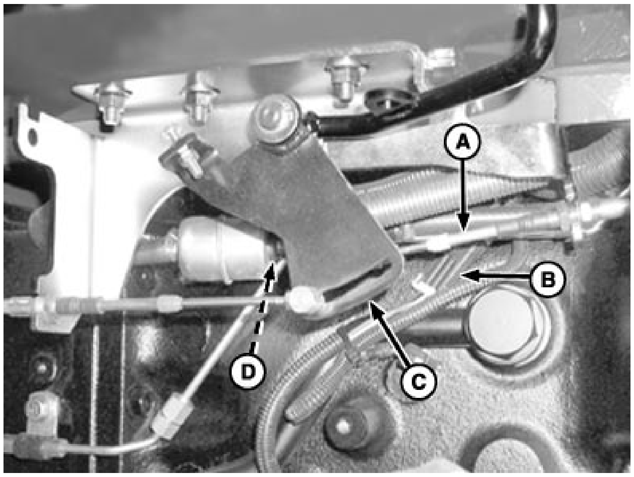
A—Differential Lock Lever
B—Differential Lock Pedal

OUO1083,00006C1 –19–30JUL04–5/12

14. Disconnect throttle-to-engine cable (A) from throttle pedal linkage (C). Mark position of jam nuts and remove cable from bracket.

15. Tractors Equipped With POWRREVERSER Transmission: Disconnect speed sensor connector (B).

16. Tractors Equipped With POWRREVERSER Transmission: Remove ground cable (D) located near fuel filter on right side of transmission case.



A—Throttle-to-Engine Cable
B— Speed Sensor Connector
C—Throttle Pedal Linkage
D—Ground Cable—POWRREVERSER Transmission

Continued on next page

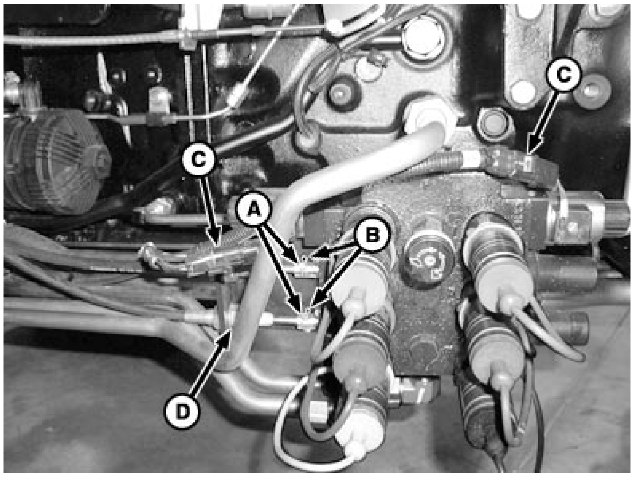
OUO1083,00006C1 –19–30JUL04–6/12

17. Tractors Equipped With Mid-Mount Control Valve: Remove spring clip (B) and clevis pin (A) on each control cable end at valve. Remove nut (D) and pull cables away from bracket.

NOTE: Triple Mid-Mount control valve is operated by cables on the lower two spools only. The third spool is electrically operated.

18. Tractors Equipped With Triple Mid-Mount Control Valve: Disconnect solenoid connectors (C).

A—Clevis Pin (2 used)
B—Spring Clip (2 used)
C—Solenoid Connectors
D—Nut



LV9923 –UN–19AUG04

OUO1083,00006C1 –19–30JUL04–7/12

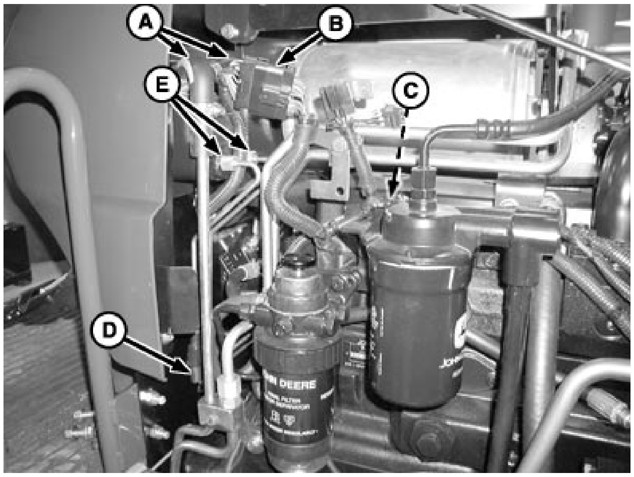
NOTE: Tag or label brake lines and hoses to aid during installation. Close all openings using caps and plugs to prevent contamination.

19. Disconnect brake valve supply hoses (A) and pressure lines (E). Remove brake line clamp (D).

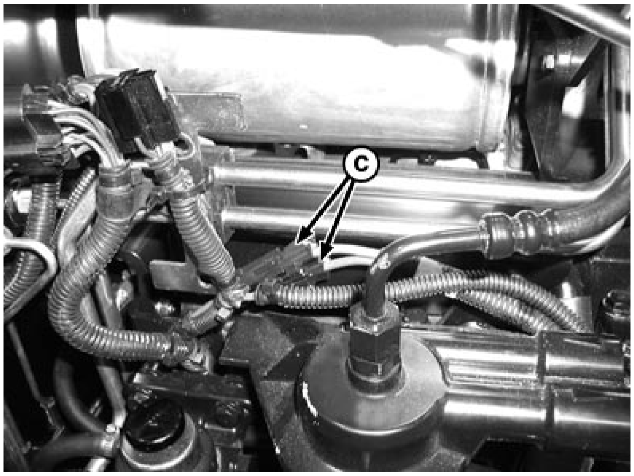
20. Disconnect main wiring harness connector (B).

21. Disconnect two 10-gauge red wire connectors (C).

A—Brake Valve Supply Hoses
B—Main Wiring Harness Connector
C—10-Gauge Red Wire Connector
D—Brake Line Clamp
E—Brake Pressure Lines



LV9924 –UN–19AUG04



LV9925 –UN–19AUG04

10-Gauge Wire Connectors

Continued on next page

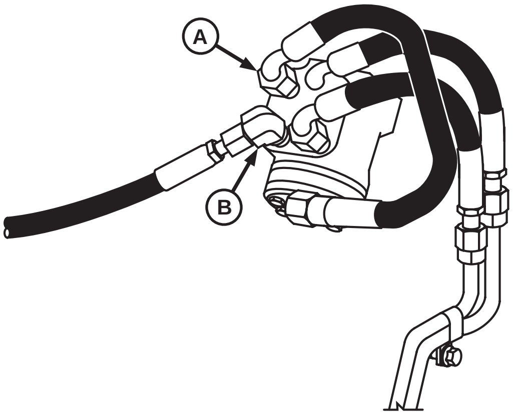
OUO1083,00006C1 –19–30JUL04–8/12

22. Tractors With 4-Cylinder Engine: Remove exhaust pipe from muffler to gain access to steering valve.

NOTE: Tag or label steering hoses to aid during installation. Close all open lines using caps and plugs to prevent contamination.

23. Disconnect four steering hoses from steering valve. Tag or label steering hoses to aid during installation. Note location of elbow fittings (A and B).

24. Remove brake line clamp from left side of cowl.



LV9920 –UN–19AUG04

A—45° Elbow Fitting
B—90° Elbow Fitting

Continued on next page

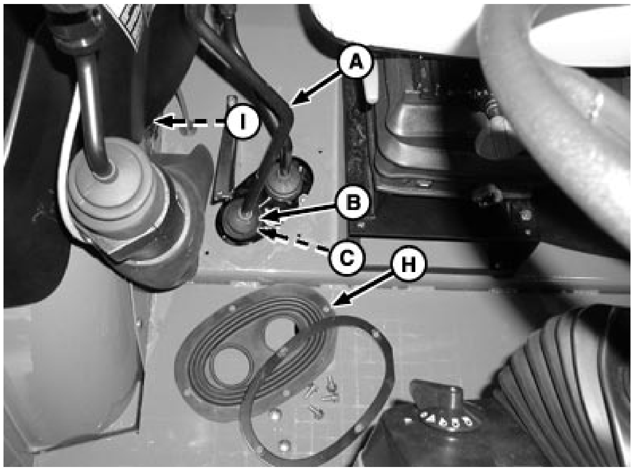
OUO1083,00006C1 –19–30JUL04–9/12

25. Remove large shift lever boot (H). Slide shift lever boots (B) up shift levers (A).

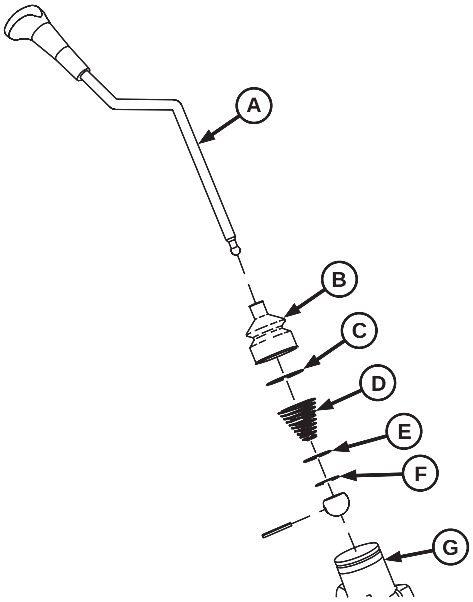
26. Tractors Equipped With POWRREVERSER Transmission With Hi/Lo Option: Disconnect Hi/Lo switch connector (I) located in right console.

27. Remove large snap ring (C). Push snap ring (C) and spring (D) up past first bend in lever. Remove small snap ring (E) and pull lever out of housing (G). Repeat with other lever.

A—Shift Lever
B—Shift Lever Boot
C—Large Snap Ring
D—Spring
E—Small Snap Ring
F—Wire Ring
G—Shift Lever Housing
H—Large Shift Lever Boot
I—Hi/Lo Switch Wire Connector (Optional)



LV9941 –UN–19AUG04



LV6956 –UN–18MAY01

Continued on next page OUO1083,00006C1 –19–30JUL04–10/12

28. Disconnect PTO clutch cable (A) from lever, if equipped.

29. Remove cable from bracket (B). Remove cable-to-transmission case clamp (C), if equipped.

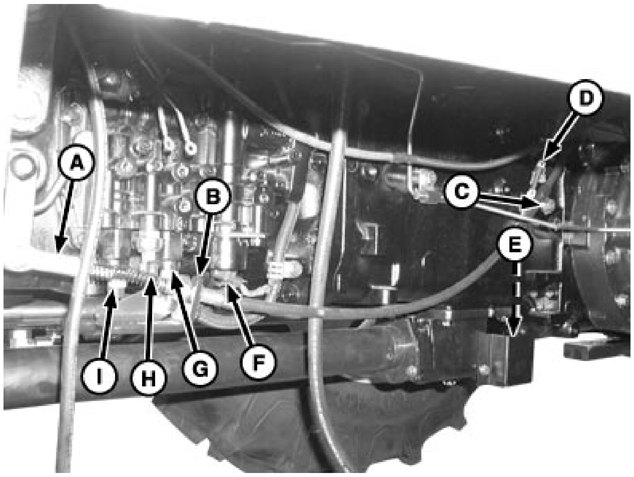
NOTE: Loosen bracket (B) mounting cap screws to remove oil pressure sensor connector (H), if equipped.

30. Tractors With POWRREVERSER Transmissions: Disconnect wire connectors from components (D—I).

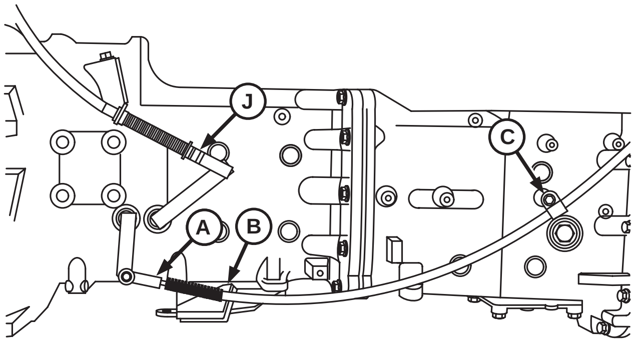
31. Tractors Without POWRREVERSER Transmissions: Disconnect traction clutch cable (J) from clutch lever. Remove retaining clip and cable from bracket.

32. Tractors Without POWRREVERSER Transmissions: Disconnect ground cable from left side of transmission case.

A—PTO Clutch Cable
B—PTO Clutch Cable Bracket
C—Cable-to-Transmission Case Clamp
D—Wheel Speed Sensor (POWRREVERSER Equipped)
E—MFWD Solenoid (MFWD Equipped)
F—Clutch Enable Valve Solenoid (POWRREVERSER Equipped)
G—Reverse Solenoid (POWRREVERSER Equipped)
H—Oil Pressure Sensor Connector (POWRREVERSER Equipped)
I—Forward Solenoid (POWRREVERSER Equipped)
J—Traction Clutch Cable



Tractors With POWRREVERSER Transmission.



Tractors Without POWRREVERSER Transmission.

Continued on next page

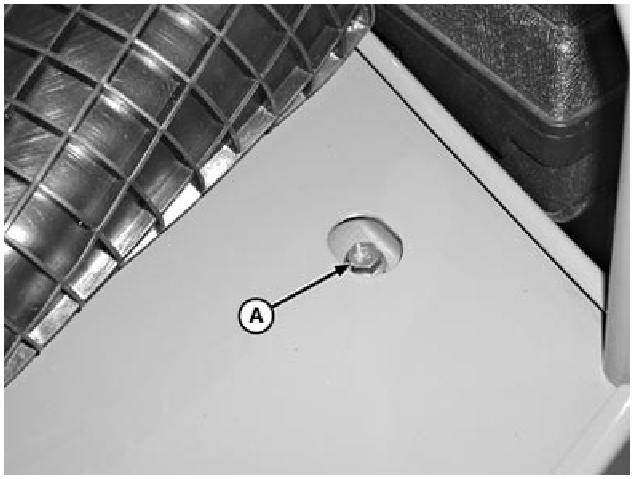
NOTE: Observe location of platform mount hardware to aid during assembly.

33. Remove two front operator station mount cap screws and nuts (A) from left and right sides.

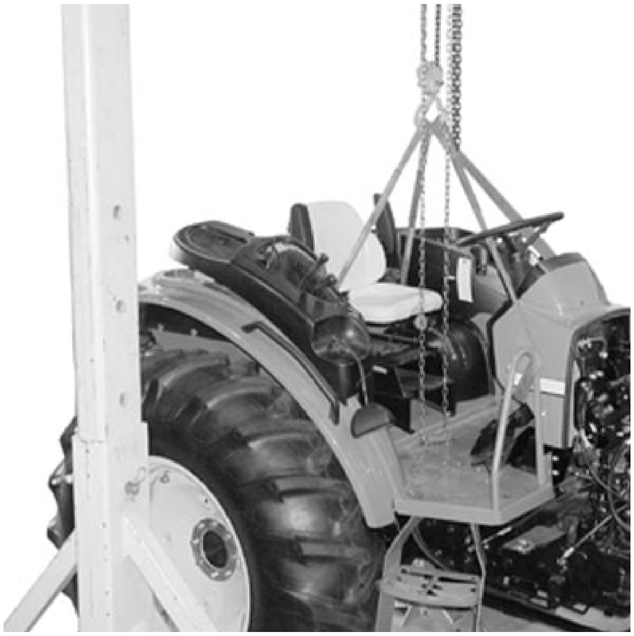
IMPORTANT: Lift isolated open operator station carefully! Check all disconnect points to ensure all hoses, lines, wires, cables and linkage have been disconnected and will not bind during removal.

34. Attach a suitable hoist and remove isolated open operator station from tractor.

A—Cap Screw and Nut



LV12349 –UN–01MAR05



LV9975 –UN–19AUG04

OUO1083,00006C1 –19–30JUL04–12/12

Install Isolated Open Operator Station

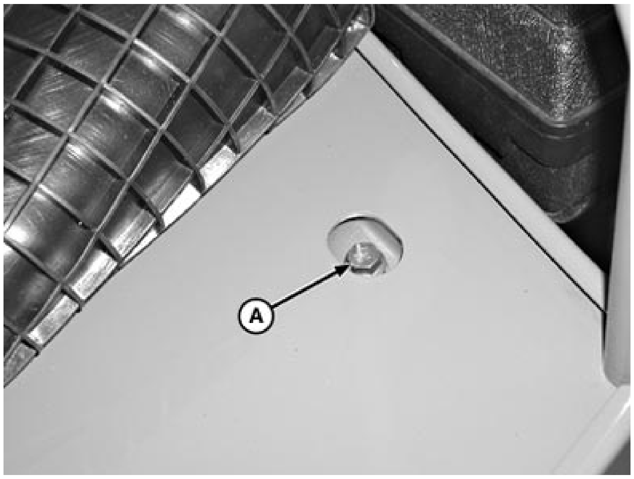
IMPORTANT: Lower isolated open operator station carefully! Check all hoses, lines, wires, cables and linkage to be sure each is routed correctly and will not become pinched when operator station is installed.

1. Place blocks on rear case to support rear of operator station. Lower operator station slowly onto tractor.

2. Install two front operator station mounting cap screws and nuts. Tighten to specification.

Specification

Isolated Open Operator Station Mounting Cap Screw—Torque	80 N•m (59 lb-ft)



LV12349 –UN–01MAR05

A—Cap Screw and Nut

Continued on next page

OUO1083,00006C2 –19–30JUL04–1/14

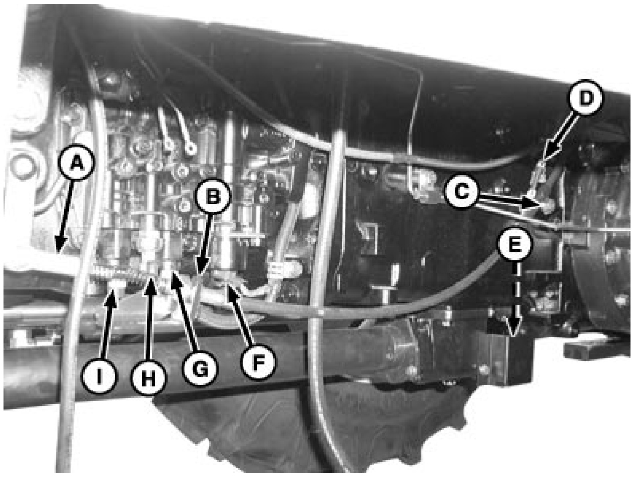
3. Install PTO clutch cable to mounting bracket (B). Connect PTO clutch cable (A) to lever. Install cable-to-transmission case clamp (C), if equipped.

4. Tractors With POWRREVERSER Transmissions: Connect wire connectors to components (D—I).

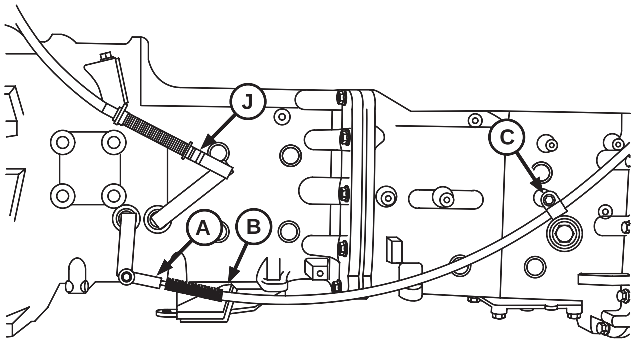
5. Tractors Without POWRREVERSER Transmissions: Attach ground cable to left side of transmission case.

6. Tractors Without POWRREVERSER Transmissions: Connect traction clutch cable (J). Tighten cable bracket (B) mounting cap screws.

A—PTO Clutch Cable
B—PTO Clutch Cable Bracket
C—Cable-to-Transmission Case Clamp
D—Wheel Speed Sensor (POWRREVERSER Equipped)
E—MFWD Solenoid (MFWD Equipped)
F—Clutch Enable Valve Solenoid (POWRREVERSER Equipped)
G—Reverse Solenoid (POWRREVERSER Equipped)
H—Oil Pressure Sensor Connector (POWRREVERSER Equipped)
I—Forward Solenoid (POWRREVERSER Equipped)
J—Traction Clutch Cable



Tractors With POWRREVERSER™ Transmission

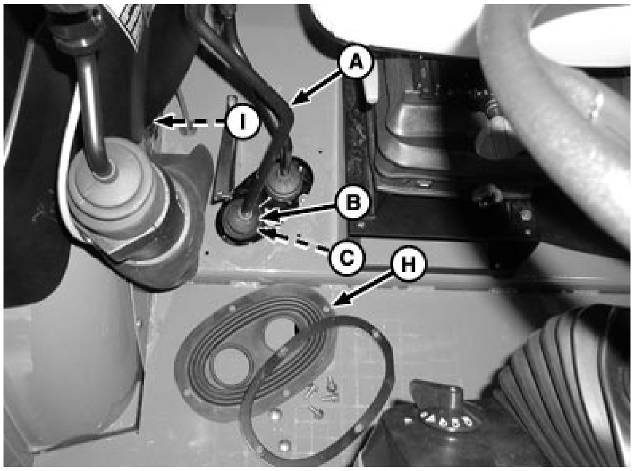


Tractors Without POWRREVERSER Transmission

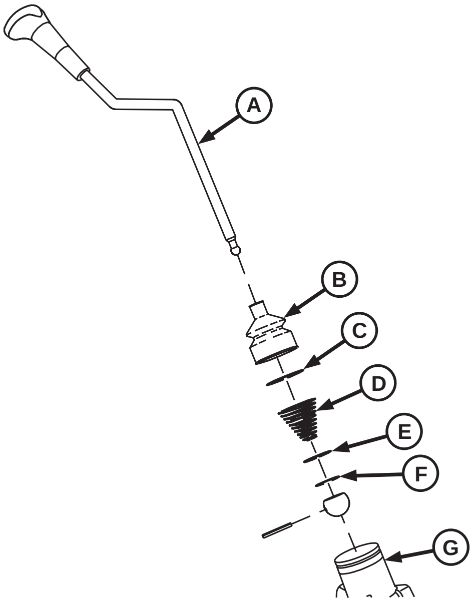
Continued on next page OUO1083,00006C2 –19–30JUL04–2/14

7. Insert lever in housing (G) and install small snap ring (E). Install spring (D) and large snap ring (C). Repeat with other lever.
8. Slide shift lever boots (B) down shift levers (A). Install large shift lever boot (H).
9. Connect Hi/Lo switch wire connector (I) if equipped.

A—Shift Lever
B—Shift Lever Boot
C—Large Snap Ring
D—Spring
E—Small Snap Ring
F—Wire Ring
G—Shift Lever Housing
H—Large Shift Lever Boot
I—Hi/Lo Switch Wire Connector (Optional)



LV9941 –UN–19AUG04

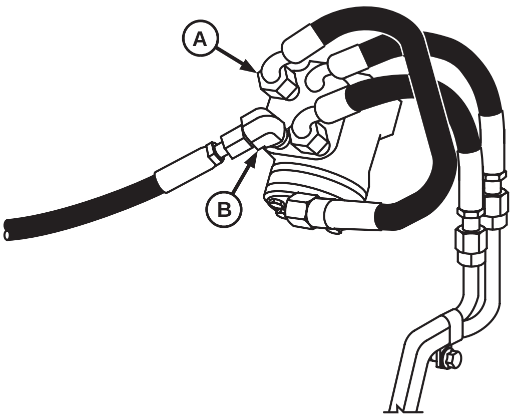


LV6956 –UN–18MAY01

Continued on next page OUO1083,00006C2 –19–30JUL04–3/14

10. Connect four steering hoses to steering valve.

11. Install left brake line clamp on left side of cowl.



LV9920 –UN–19AUG04

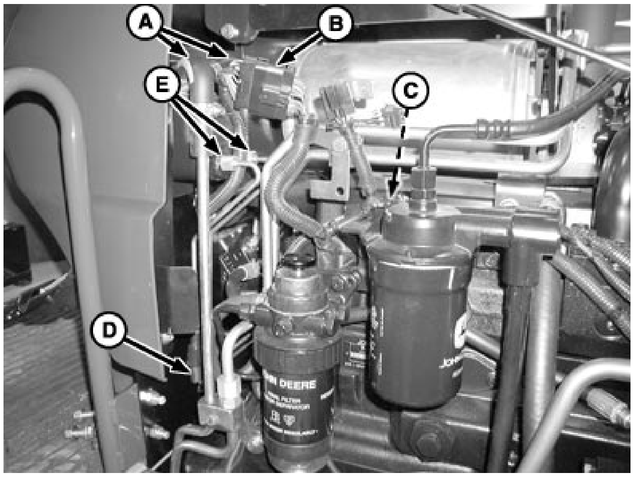
A—45° Elbow Fitting
B—90° Elbow Fitting

OUO1083,00006C2 –19–30JUL04–4/14

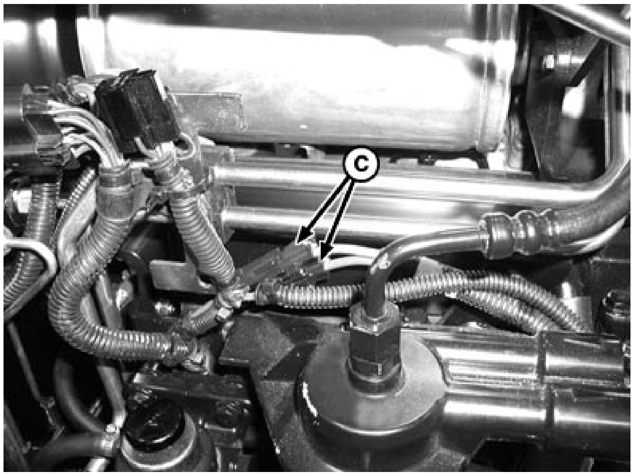
12. Connect two 10-gauge red wire connectors (C).

13. Connect main wiring harness connector (B).

14. Connect brake valve supply hoses (A) and pressure lines (E) as marked during disassembly. Install brake line clamp (D).



LV9924 –UN–19AUG04



LV9925 –UN–19AUG04

10-Gauge Wire Connectors

A—Brake Valve Supply Hoses
B—Main Wiring Harness Connector
C—10-Gauge Red Wire Connectors
D—Brake Line Clamp
E—Brake Pressure Lines

Continued on next page

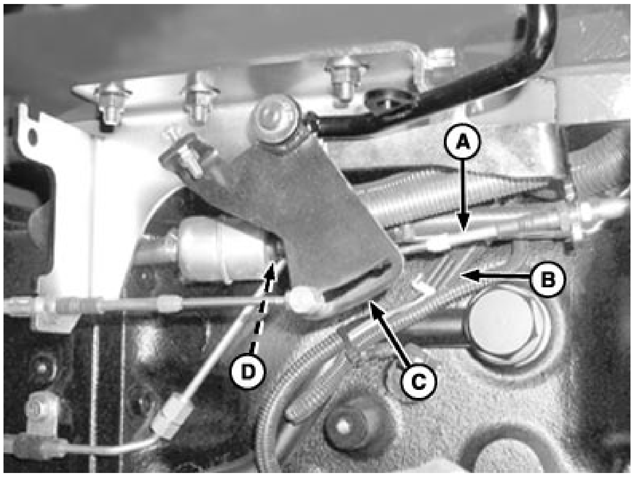
OUO1083,00006C2 –19–30JUL04–5/14

15. Tractors With POWRREVERSER Transmissions: Connect ground cable (D) to right side of transmission housing near fuel filter.

16. Tractors With POWRREVERSER Transmissions: Connect speed sensor connector (B).

17. Connect throttle-to-engine cable (A) to throttle pedal linkage (C).

A—Throttle-to-Engine Cable
B—Speed Sensor Connector
C—Throttle Pedal Linkage
D—Ground Cable



LV9922 –UN–19AUG04

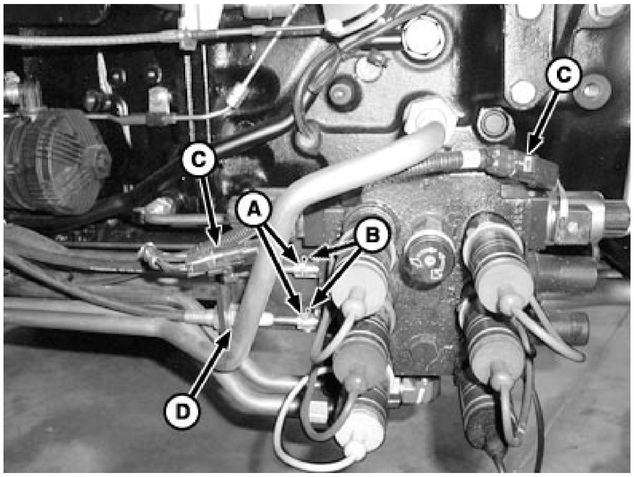
OUO1083,00006C2 –19–30JUL04–6/14

18. Tractors Equipped With Mid-Mount Control Valve: Install control cables into bracket and install nuts (D). Attach cable ends to valve spools using clevis pins (A) and spring clips (B).

NOTE: Triple Mid-Mount control valve is operated by cables on the lower two spools only. The third spool is electrically operated.

19. Tractors Equipped With Triple Mid-Mount Control Valve: Connect solenoid wire connectors (C).

A—Clevis Pin (2 used)
B—Spring Clip (2 used)
C—Solenoid Connectors
D—Nut



LV9923 –UN–19AUG04

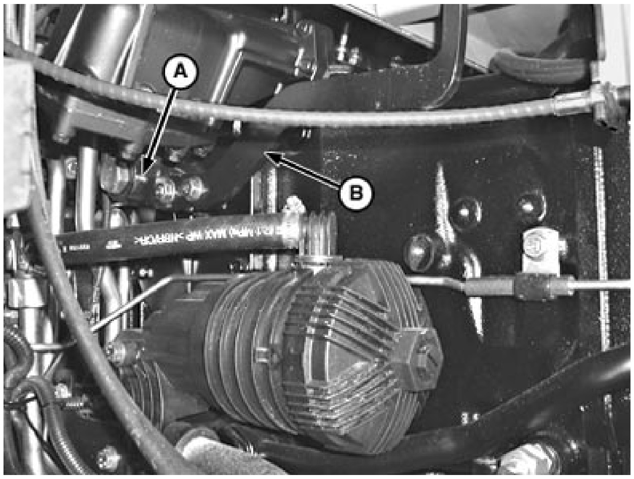
Mid-Mount Control Valve

Continued on next page

OUO1083,00006C2 –19–30JUL04–7/14

20. Install differential lock pedal (B) on differential lock lever (A). Install differential lock pedal pad.

21. Install ROLL-GARD™. (See Remove and Install ROLL-GARD—Isolated Open Operator Station in Section 90, Group 10.)



A—Differential Lock Lever
B—Differential Lock Pedal

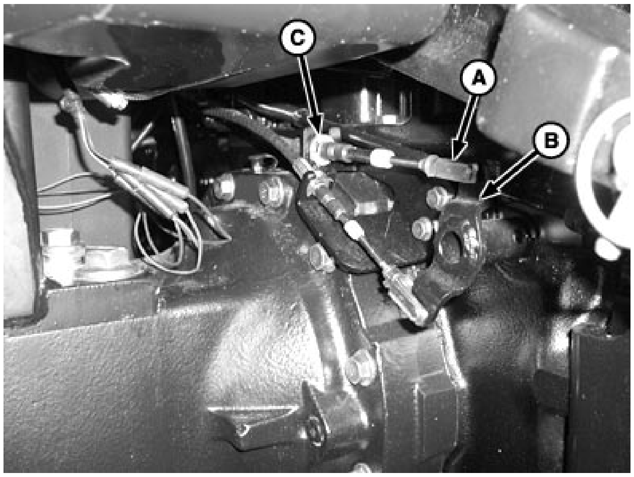
ROLL-GARD is a trademark of Deere & Company

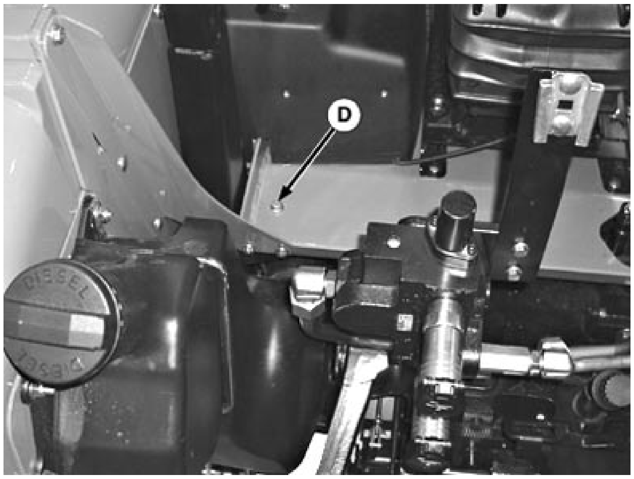
OUO1083,00006C2 –19–30JUL04–8/14

22. Tractors Equipped With 540/540E: Install 540/540E cable in support bracket and secure with retaining clip (C). Connect cable (A) to bellcrank (B).

23. Install rear operator station mount cap screws and nuts (D).Tighten to specification.

Specification	
Isolated Open Operator Station Mounting Cap Screw—Torque	80 N•m (59 lb-ft)





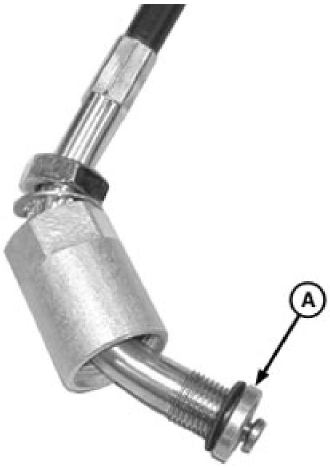
A—540/540E Control Cable
B—Bellcrank
C—Cable Retaining Clip
D—Cap Screw and Nut (2 used)

Continued on next page

OUO1083,00006C2 –19–30JUL04–9/14

24. Before installing SCV cables, inspect retaining nut (A). If loose, apply high strength Loctite 271 and tighten securely without damaging OD of retaining nut.

A—Retaining Nut

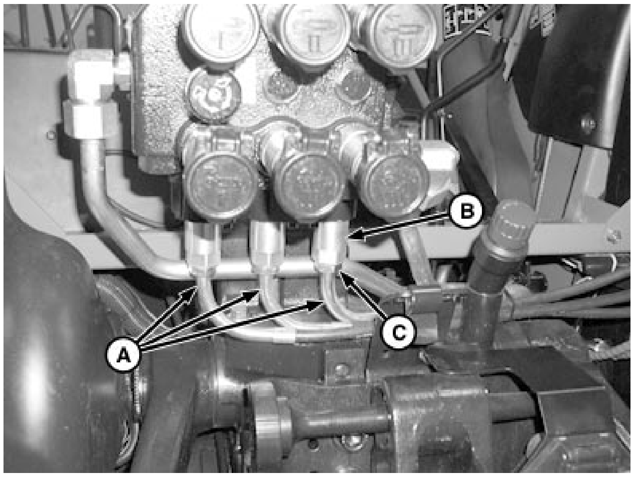


LV12307 –UN–17FEB05

OUO1083,00006C2 –19–30JUL04–10/14

25. Install rear SCV cables (A).

A—Rear SCV Cables
B—Cable Retainer
C—Jam Nut



LV9918 –UN–20AUG04

Continued on next page

OUO1083,00006C2 –19–30JUL04–11/14

26. Install rockshaft control cables (B).

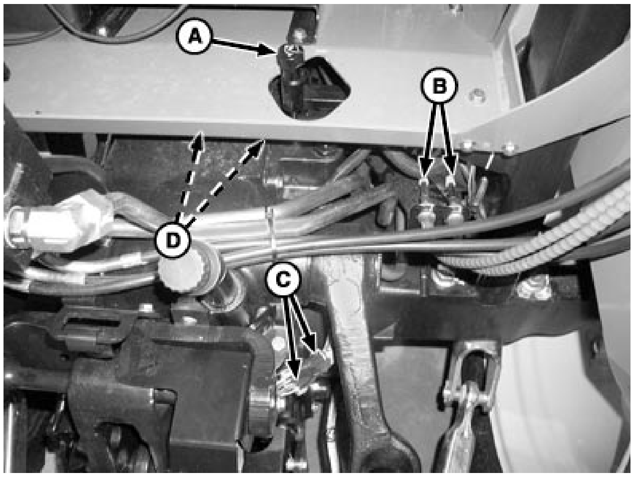
27. Tractors Without EH Hitch: Install rate-of-drop knob (A).

28. Connect wire connectors and sensors (C—I).

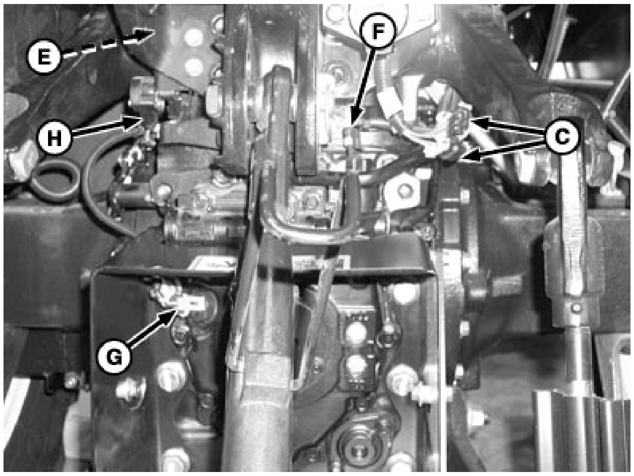
29. Install and fill fuel tank. (See Remove, Inspect, and Install Fuel Tank—Isolated Open Operator Station and Cab Tractors in Section 30, Group 05.)

30. Connect battery, positive (+) cable first.

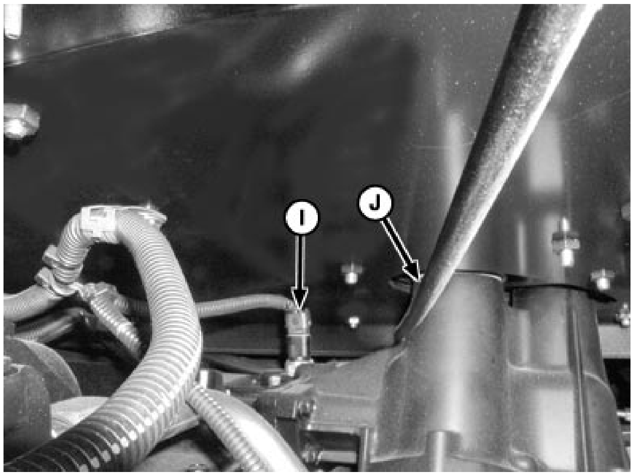
A—Rate-of-Drop Knob
B—Rockshaft Control Cables
C—7-Pin Electrical Outlet Wire Connectors
D—EH Hitch Connectors (Optional)
E—EH Hitch Feedback Sensor (Optional)
F—EH PTO Connector (Optional)
G—EH PTO Speed Sensor (Optional)
H—EH Hitch Draft Depth Sensor (Optional)
I—Electric Park Sensor (POWRREVERSER equipped)
J—Shift Lever Housing



Manual Hydraulic Hitch Shown



EH PTO Connectors



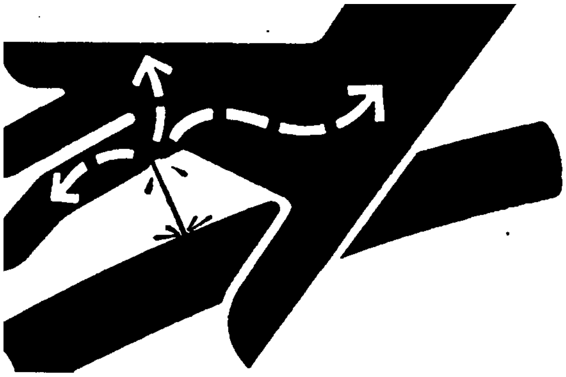
Park Sensor

Continued on next page

OUO1083,00006C2 –19–30JUL04–12/14

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 –UN–23AUG88

31. Start engine and check for hydraulic leaks. Note any leaks and make repairs as necessary.

32. Adjust fast and slow idle speeds. (See Fast Idle Adjustment and Slow Idle Adjustment in CTM104 or CTM301.)

33. If Equipped: Check PTO cable for proper adjustment. (See Reference 256-15-004, PTO Clutch Lever Linkage Adjustment-Isolated Open Operator Station and Cab Tractors (Without Electro-Hydraulic PTO) in TM2197, Section 250, Group 15.)

34. If Equipped: Check traction clutch cable for proper adjustment, if equipped. (See Reference 251-15-001, Checking and Adjusting Clutch Pedal Free Play in TM2197, Section 250, Group 15.)

35. If Equipped: Adjust Mid-Mount control valve cables. (See Reference 270-15-013, Mid-Mount Control Valve Cable Adjustment in TM2197, Section 270, Group 15.)

36. If Equipped: Check adjustment of 540/540E. (SeeReference 256-15-005, PTO 540/540E Lever and Linkage Adjustment in TM2197, Section 256, Group 15.)

Continued on next page

37. If Equipped: Check adjustment of rear SCV cables. (See Reference 270-15-015, Rear SCV Cable Adjustment-Isolated Open Operator Station and Cab Tractors in TM2197, Section 270, Group 15.)

38. Check hydraulic oil level. Fill to full mark with specified oil. (See Transmission and Hydraulic Oil in Section 10, Group 20).

39. Bleed brakes. (See Reference 260-15-009, Bleed Rear Brakes in TM2197, Section 260, Group 15).

40. If Equipped: Check rockshaft cable adjustment. (See Reference 270-15-018, Rockshaft Position-Sensing Feedback Linkage Adjustment (Mechanical Hitch) and Reference 270-15-019, Rockshaft Draft-Sensing Feedback Linkage Adjustment (Mechanical Hitch) in TM2197, Section 270, Group 15.)

41. Install hood on tractor.

42. Perform Operational Checkout Procedures. (See Operator’s Manual.)

OUO1083,00006C2 –19–30JUL04–14/14

Group 20
Air Conditioning System

Essential Tools

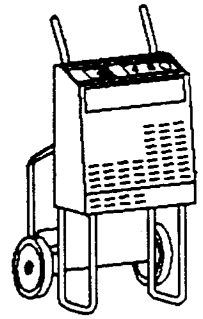
NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

JG31785,00003AA –19–18JAN05–1/12

Recovery and Recycling Station . . . . JT02050[1]

Servicing air conditioning system using R134a refrigerant.



RW21613 –UN–17AUG92

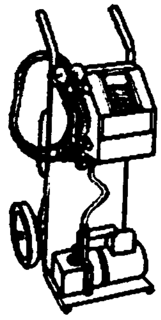
---

[1] *Used with JT02046 Charging Station. JT02047 Recovery, Recycling, and Recharging Station can be substituted for JT02046 and JT02050.*

JG31785,00003AA –19–18JAN05–2/12

HFC134a Charging Station. . . . . JT02046[1]

Servicing air conditioning system using R134a refrigerant.



RW21595 –UN–17AUG92

---

[1] *Used with JT02050 Recovery and Recycling Station. JT02047 Recovery, Recycling, and Recharging Station can be substituted for JT02046 and JT02050.*

JG31785,00003AA –19–18JAN05–3/12

R134a Refrigerant Recovery, Recycling, and Charging Station JT02047

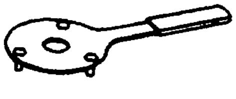
Services air conditioning system using R134a refrigerant.

JG31785,00003AA –19–18JAN05–4/12

RW19932 –UN–19MAY92

A/C Compressor Clutch Spanner JDG747

Removes compressor clutch.

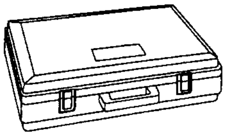


Continued on next page

JG31785,00003AA –19–18JAN05–5/12

Pulley Remover D05277ST

Removes compressor pulley.

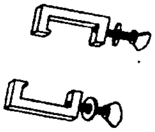


RW40022 –UN–08SEP93

JG31785,00003AA –19–18JAN05–6/12

Jaws JDG748

Used with D05277ST Pulley Remover to remove compressor pulley.

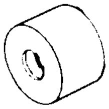


RW19935 –UN–19MAY92

JG31785,00003AA –19–18JAN05–7/12

Forcing Screw Pilot. JDG771

Removes compressor clutch.

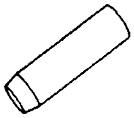


RW21598 –UN–17AUG92

JG31785,00003AA –19–18JAN05–8/12

Compressor Seal Protector JDG746

Installs seal on compressor.

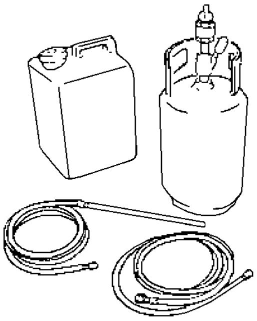


RW19943 –UN–19MAY92

JG31785,00003AA –19–18JAN05–9/12

Air Conditioning Flushing Unit JT02075

Flushes air conditioning system.

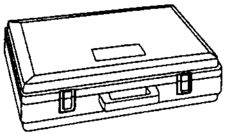


RW25566 –UN–16DEC96

JG31785,00003AA –19–18JAN05–10/12

Flushing Attachment Kit JT02078

Flushes air conditioning system.

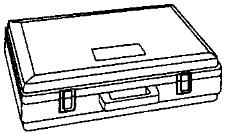


RW40022 –UN–08SEP93

JG31785,00003AA –19–18JAN05–11/12

Air Conditioning R12/R134a Fitting Kit JT02098

Connects flushing, purging, and pressure equipment.



RW40022 –UN–08SEP93

JG31785,00003AA –19–18JAN05–12/12

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

JG31785,00003AB –19–18JAN05–1/10

Adapter JT02099

Connects gauge set to suction port of compressor.

JG31785,00003AB –19–18JAN05–2/10

Cap JT03194

Closes suction port adapter during compressor volumetric efficiency test.

JG31785,00003AB –19–18JAN05–3/10

Adapter JT02100

Connects gauge set to discharge port of compressor.

JG31785,00003AB –19–18JAN05–4/10

Adapter JT02121

Connects gauge set to discharge port of compressor.

JG31785,00003AB –19–18JAN05–5/10

Hose JT02109

Connects gauge set to discharge port of compressor.

JG31785,00003AB –19–18JAN05–6/10

Electronic Leak Detector JT02081

Detect refrigerant leaks.

Continued on next page

JG31785,00003AB –19–18JAN05–7/10

Compressor Holding Fixture . . . . DFRW20[1]

Holds compressor during repair.

[1] *Dealer fabricated tool. See Section 99 Group 05 for instructions to make tool.*

Adapter JT02102

Connects flusher outlet hose to inlet connection of compressor discharge line for flushing condenser.

Adapter JT03197

Attaches return hose and aerator nozzle to receiver/dryer inlet line connection for flushing condenser.

Other Material

Number	**Name**	**Use**
TY22025 (U.S.)	R134a Refrigerant Oil	Used to lubricate O-rings, gaskets, and lip seal during assembly of compressor.
TY15949 (12 oz) (U.S.) TY15950 (15 lb) (U.S.) TY15951 (30 lb) (U.S.)	Refrigerant R134a	Used to charge the air conditioning system.
JT02077 (U.S.)	ART338 A/C Flushing Solvent	Used to flush air conditioning system.
	GENESOLV 2004 Solvent®	Used to flush air conditioning system.
	Naphtha 673 Parts Solvent	Used to flush air conditioning system.

GENESOLV 2004 is a registered trademark of the Micro Care Corporation (800-638-0125).

Specifications

Item	Measurement	Specification
Receiver/Dryer Lines	Torque	14—20 N•m (10—15 lb-ft)
Condenser Outlet Line	Torque	14—20 N•m (10—15 lb-ft)
Condenser Inlet Line	Torque	33—39 N•m (24—29 lb-ft)
Compressor Suction Line	Torque	35—42 N•m (25—31 lb-ft)
Compressor Discharge Line	Torque	33—39 N•m (24—29 lb-ft)
Clutch Hub Retaining Cap Screw	Torque	14 N•m (10 lb-ft)
Compressor Through Bolt	Torque	26 N•m (19 lb-ft)
Hub-to-Pulley	Clearance	0.35—0.65 mm (0.014—0.026 in.)
Manifold Cap Screw	Torque	26 N•m (19 lb-ft)
Compressor Relief Valve	Torque	12—16 N•m (9—12 lb-ft)

JG31785,00003AD –19–18JAN05–1/1

Service Parts Kits

The following kits are available through your parts catalog:

Compressor Shaft Seal Kit

Compressor Clutch Hub and Pulley Kit

Compressor Clutch Coil Kit

Compressor Hardware Kit

JG31785,00003AE –19–18JAN05–1/1

Recover/Recycle Air Conditioning Refrigerant

Operate the air conditioning system for 10 minutes with engine at 2000 rpm if the compressor is operable. Set temperature control for maximum cooling and blower switch at high. This allows the refrigerant oil to be circulated through the system and indicates the quantity of oil in the compressor.

Stop the engine and use the following procedure to recover and recycle the A/C refrigerant.

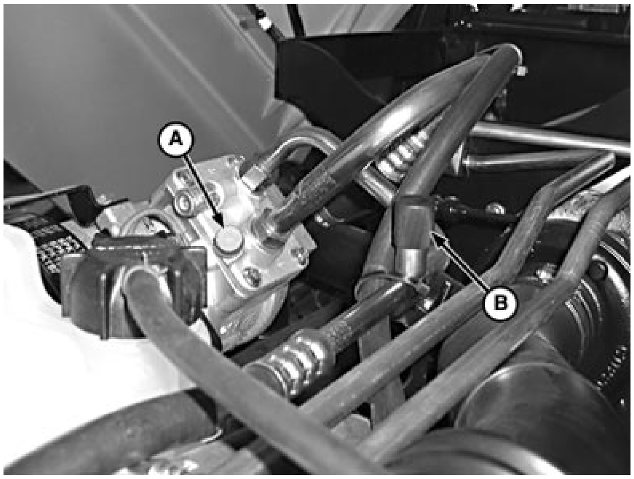
IMPORTANT: Use only R134a Refrigerant Recovery, Recycling, and Charging machines. Do not mix R134a equipment, refrigerant, and refrigerant oils with R-12 systems to prevent compressor damage.

1. Connect JT02050 R134a Refrigerant Recovery and Recycling Station to a JT02046 HFC134a Refrigerant Charging Station.

NOTE: JT02047 R134a Refrigerant Recovery, Recycling, and Charging Station can be substituted for the JT02046 and JT02050. JT02168 Enviro-Charge Plus can be substituted for all recovery, recycling, and recharging stations.

2. Connect low-side hose (blue) from the charging station to suction fitting (A) on the compressor. Connect high-side hose (red) to discharge fitting (B) on the discharge line.

3. Follow the manufacturer’s instructions and discharge the system. Cap the fittings to prevent contamination from entering the system.



LV12108 –UN–19JAN05

A—Suction Fitting (Low Side)
B—Discharge Fitting (High Side)

JG31785,00003AF –19–18JAN05–1/1

Replace Air Conditioning Receiver/Dryer

NOTE: The receiver/dryer is not serviceable. If malfunction is suspected, install new receiver/dryer.

1. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

NOTE: Receiver/dryer is located along the right side of transmission.

2. Disconnect lines (A and C) from receiver/dryer. Cap or plug all lines to prevent contamination.
3. Remove cap screw and nut (B).

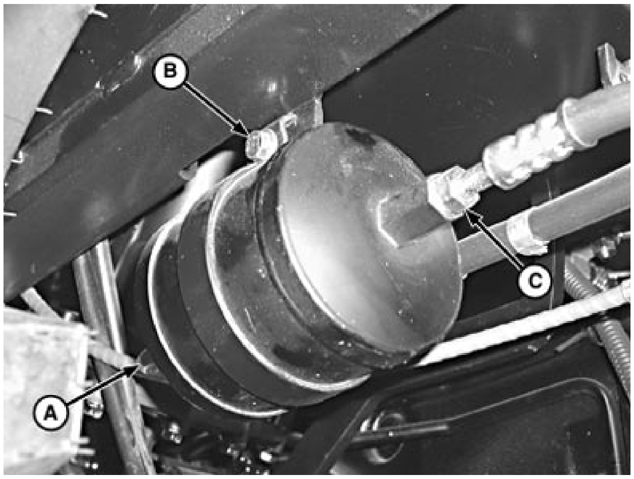
NOTE: When a new receiver/dryer is installed and there were no leaks found in the system, add 15 mL (0.5 oz) of R134a Refrigerant Oil. If leaks are evident in the system, follow procedure for checking and adding refrigerant oil. (See Determine Correct Refrigerant Oil Charge and Add Refrigerant Oil to System in Section 90, Group 20.)

IMPORTANT: If installing a new receiver-dryer after replacement of the air conditioning compressor was performed, you must flush the air conditioning system before installing the new receiver-dryer. See Flush Air Conditioning System in this group.

4. Install receiver/dryer with area marked top in up position. Install cap screw and nut (B).
5. Connect lines (A and C). Tighten to specification.

Specification	
Receiver/Dryer Lines—Torque	14—20 N•m (10—15 lb-ft)

6. Evacuate and charge the system. (See Charge Air Conditioning System in Section 90, Group 20.)

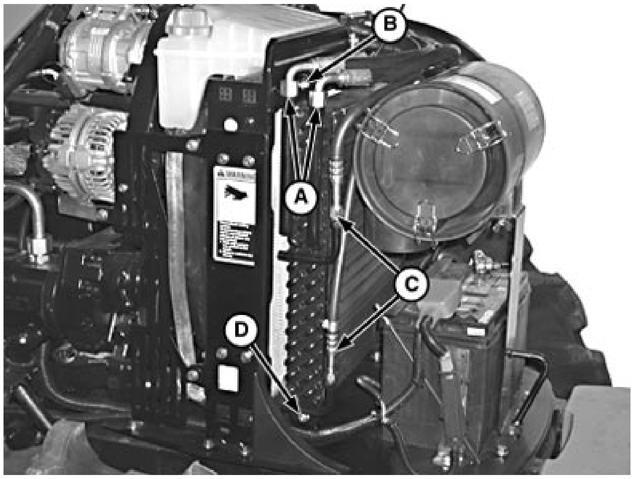


LV12109 –UN–19JAN05

A—Line to Evaporator
B—Cap Screw and Nut
C—Line from Condenser

OUO1023,0002760 –19–21OCT05–1/1

Remove, Inspect, and Install Air Conditioning Condenser



A—Hydraulic Hose (2 used)
B—Cap Screw (2 used)
C—Condenser Lines (2 used)
D—Cap Screw and Nut (2 used)

1. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

NOTE: Tag or label lines and hoses before disconnecting to aid during installation.

To avoid damage to condenser/oil cooler, always use a backup wrench when loosening or tightening lines at condenser/oil cooler.

Close all openings using caps and plugs to prevent contamination.

2. Disconnect hydraulic hoses (A). Close all openings using caps and plugs.
3. Disconnect condenser lines (C). Close all openings using caps and plugs.
4. Remove cap screws and nuts (B and D) from each side of condenser.
5. Remove and inspect condenser.

CAUTION: Reduce compressed air to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes between fins. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.

6. Check condenser for debris lodged in fins. Clean condenser using compressed air or pressure washer.
7. Inspect condenser for bent fins, cracks, and damaged seams. Repair as necessary.
8. Test condenser for leaks by spraying the surface using a 50-50 mixture of liquid soap and water.

Continued on next page

NOTE: The upper tube on condenser is the inlet; the lower tube is the outlet.

9. Cap or plug the outlet tube on the condenser.

10. Apply 689 kPa (68.9 bar) (100 psi) of air pressure to the inlet tube and check for leaks.

NOTE: Minor leaks may be repaired, but condenser should be replaced if there is a major leak or restriction.

11. Repair or replace condenser unit as required.

Continued on next page

JG31785,00003B2 –19–19JAN05–2/3

IMPORTANT: Always use new O-rings and seals. Damaged or used O-rings and seals will leak.

12. Flush the air conditioning condenser if condenser was tested for leaks using air pressure. (See Flush Air Conditioning System in Section 90, Group 20.)

13. Install air conditioning condenser.

14. Install cap screws and nuts (B and D) on each side of condenser.

NOTE: To avoid damage to condenser/oil cooler, always use a backup wrench when loosening or tightening lines at condenser/oil cooler.

15. Connect hydraulic hoses (A).

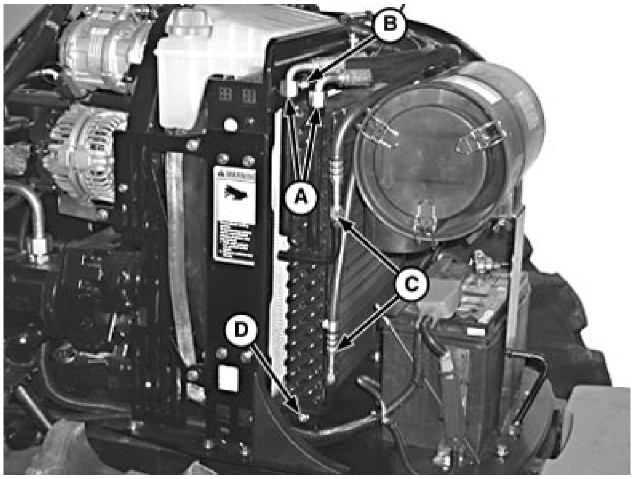
NOTE: The upper tube on condenser is the inlet, the lower tube is the outlet.

16. Connect condenser lines (C). Tighten to specifications.

Specification	
Condenser Outlet Line—Torque	14—20 N•m (10—15 lb-ft)
Condenser Inlet Line—Torque	33—39 N•m (24—29 lb-ft)

17. Evacuate and charge air conditioning system. (See Evacuate Air Conditioning System and Charge Air Conditioning System in Section 90, Group 20.)

18. Start engine and check for leaks. Adjust hydraulic/transmission oil level as needed.



LV12110 –UN–19JAN05

A—Hydraulic Hose (2 used)
B—Cap Screw (2 used)
C—Condenser Lines (2 used)
D—Cap Screw and Nut (2 used)

JG31785,00003B2 –19–19JAN05–3/3

Remove, Inspect, and Install Air Conditioning Compressor

1. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

2. Release belt tension and remove belt from compressor pulley.

3. Disconnect suction line (A) and discharge line (B).

4. Disconnect electrical connector (C).

NOTE: Note location of compressor ground wire to aid during assembly.

5. Remove cap screws (D and E) and belt guard (F).

IMPORTANT: If compressor is repaired or replaced make sure to flush the complete air conditioning system and install a new receiver-dryer.

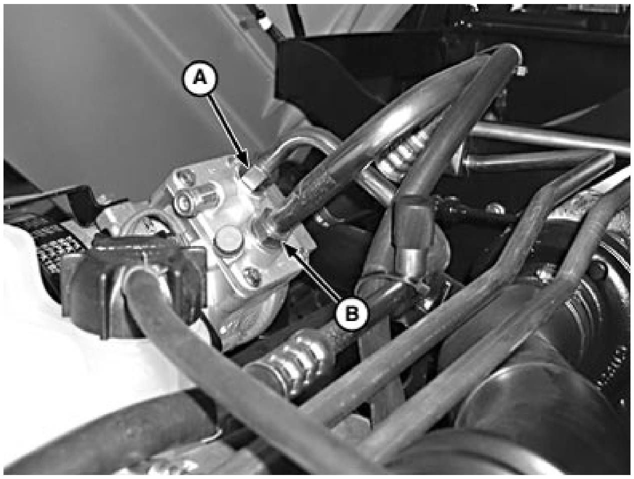
6. Repair or replace compressor if necessary.

7. Flush the complete system if the compressor was repaired or replaced. (See Flush Air Conditioning System in Section 90, Group 20.)

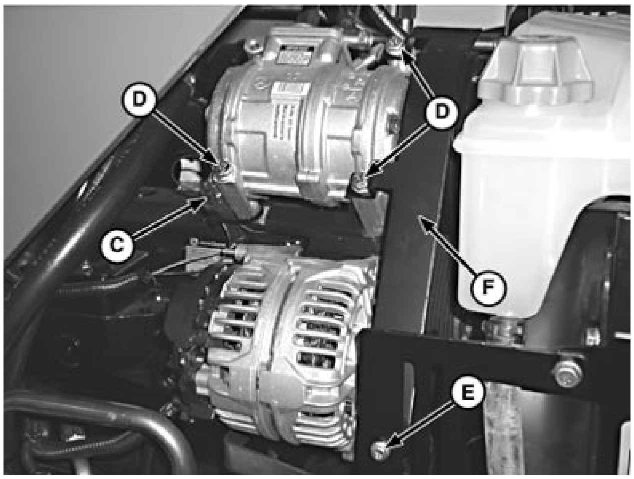
8. Install a new receiver-dryer if the compressor was repaired or replaced. (SeeReplace Air Conditioning Receiver/Dryer in this group.)

IMPORTANT: A new compressor already has the required amount of PAG oil installed. Failure to flush the air conditioning system before the new compressor is installed will create excess PAG oil in the system, resulting in excessive high pressure which can lead to compressor failure.

9. Determine correct compressor oil charge. (See Determine Correct Refrigerant Oil Charge in Section 90, Group 20.)



LV12112 –UN–19JAN05



LV12111 –UN–19JAN05

A—Suction Line (Low Side)
B—Discharge Line (High Side)
C—Electrical Connector
D—Cap Screw (3 used)
E—Cap Screw
F—Belt Guard

Continued on next page

NOTE: Install compressor ground wire with cap screw (D).

10. Install compressor with belt guard (F) and cap screws (D and E).

11. Connect electrical connector (C).

12. Connect suction (A) and discharge (B) lines to compressor. Tighten to specification.

Specification

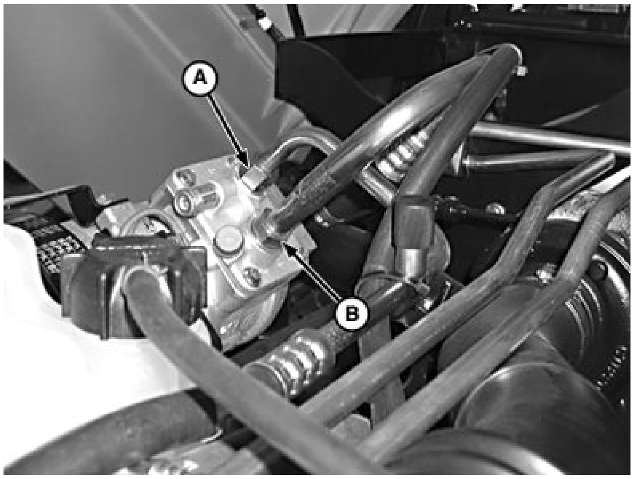
Compressor Suction Line—Torque	35—42 N•m (25—31 lb-ft)
Compressor Discharge Line—Torque	33—39 N•m (24—29 lb-ft)

13. Install belt on compressor pulley.

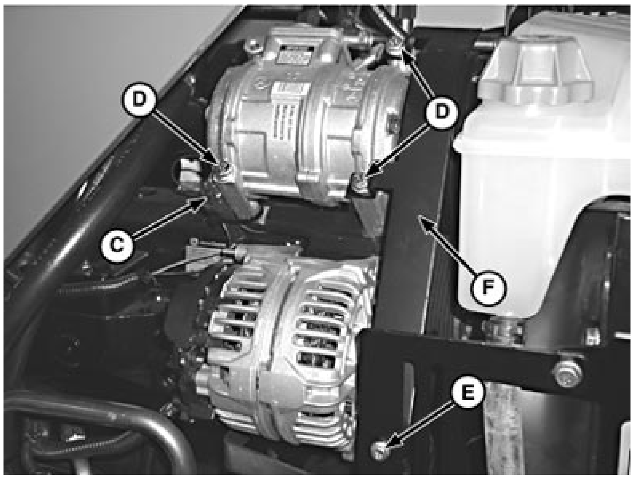
14. Evacuate and recharge system. (See Charge Air Conditioning System in Section 90, Group 20.)

IMPORTANT: If new compressor clutch was installed, turn compressor on and off (with engine running) in one-second intervals for five seconds (cycle five times in five seconds). This will burnish clutch and hub drive surfaces.

A—Suction Line (Low Side)
B—Discharge Line (High Side)
C—Electrical Connector
D—Cap Screw (3 used)
E—Cap Screw
F—Belt Guard



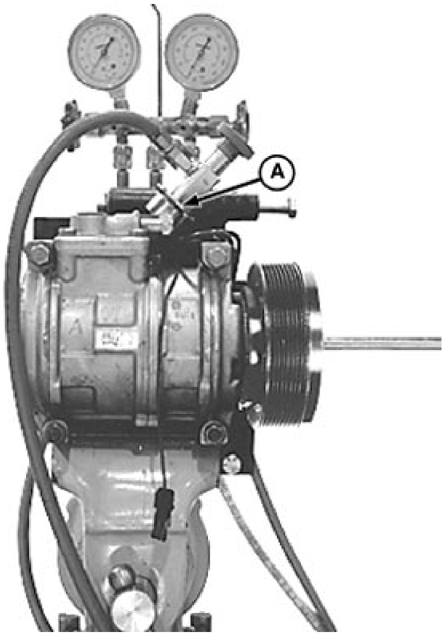
LV12112 –UN–19JAN05



LV12111 –UN–19JAN05

OUO1023,000276E –19–24OCT05–2/2

Test Volumetric Efficiency of Compressor



A—Suction Test Port

1. Drain oil from compressor and record amount.

2. Remove front cover from compressor pulley and rotate drive shaft using a speed wrench and 10 mm socket, 30 turns.

3. Drain remaining oil from compressor and record amount.

   If oil was drained in steps 1 and 3, go to step 4.

   If no oil was drained, add two ounces of R134a Refrigerant Oil in suction port and slowly turn compressor shaft in each direction at least two times. Repeat steps 1, 2, and 3.

4. Secure compressor in a vise with ports upward.

5. Install JT02099 Adapter in suction port with JT03194 Cap.

6. Connect suction hose coupler of gauge set to suction test port (A) on manifold.

7. Close discharge side valve of gauge set and open valve on suction side of gauge set.

8. Rotate compressor drive shaft with speed wrench to obtain peak vacuum on low-side gauge. Check for even suction (no pulsing) while turning wrench at a slow rate to maintain peak vacuum 63.5 cm Hg (25 in. Hg) minimum.

9. Stop rotating shaft and check leak-down time. Compressor should hold peak vacuum for three seconds minimum.

   If compressor does not hold peak vacuum for three seconds, inspect compressor valve plates and cylinder walls for damage. Repair compressor.

10. Open suction port of compressor to atmosphere.

Continued on next page

11. Connect gauge set suction hose to discharge port (A) using Adapters JT02100 and JT02121, and JT02109 Hose.

12. Close gauge set suction side valve.

13. Rotate drive shaft no faster than two turns per second for six turns.

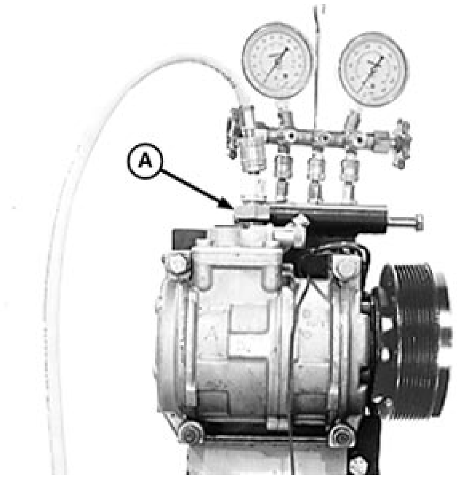
14. Record pressure after six complete turns. Pressure should be 380 kPa (3.8 bar) (55 psi) minimum.

NOTE: Pressure normally leaks down when rotation stops.

15. Continue to rotate compressor at a uniform speed to obtain peak pressure. Compression pressure should increase smoothly and should not vary more than 34 kPa (0.34 bar) (5 psi) at peak pressure. Bleed off pressure and repeat steps 12, 13, 14, and 15 four times.

NOTE: Pressure varying more than 34 kPa (0.34 bar) (5 psi) indicates a leaking reed valve or piston seal. Inspect compressor valve plates and cylinder walls for damage. Repair compressor.

16. Leak test compressor. (See Test Compressor Shaft Seal Leakage in Section 90, Group 20.)

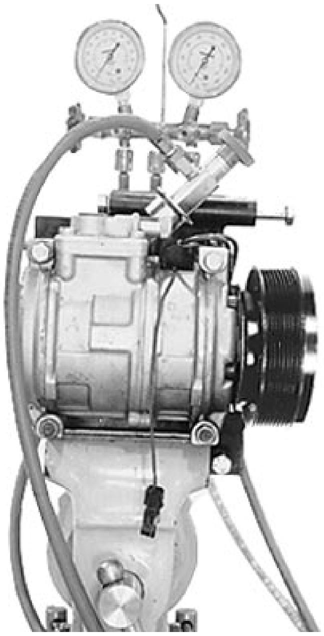


LV12283 –UN–18FEB05

A—Discharge Port

JG31785,00003DE –19–10FEB05–2/2

Test Compressor Shaft Seal Leakage



LV12284 –UN–18FEB05

1. Remove front plate from compressor pulley.

2. Remove clutch hub and screw.

IMPORTANT: Do not lose inner clutch hub shims.

3. Install JT02099 Adapter in suction port and JT02100 Adapter in discharge port. Cap discharge port adapter using JT03194.

4. Connect gauge set and/or container of R134a Refrigerant to suction port of compressor as shown in photo.

5. Open valves to pressurize compressor.

IMPORTANT: Do not exceed range of low pressure gauge.

6. Check the following for leaks using JT02081 Electronic Leak Detector or 50-50 mix of soap and water:

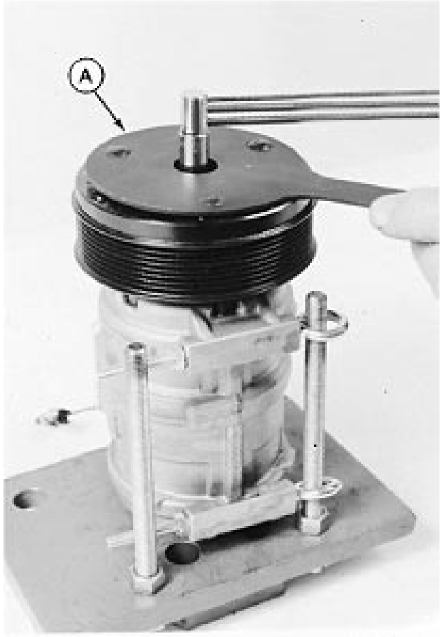
    - Shaft seal
    - Manifold seal
    - Housing seals at front, rear, and midsection of compressor body
    - Relief valve
    - Suction coupler Schraeder valve

    Leakage should not exist. Repair compressor, if required, and repeat test.

7. Assemble compressor and add required oil. (See Determine Correct Refrigerant Oil Charge in Section 90, Group 20.)

JG31785,00003DF –19–10FEB05–1/1

Disassemble and Assemble Compressor Clutch



RW21157 –UN–24JUN92

1. Mount compressor on DFRW20 Compressor Holding Fixture using two 6-in. x 1/4-in. eye bolts with nuts as illustrated. (See DFRW20—Compressor Holding Fixture in Section 99, Group 05.)

2. Remove dust cover.

3. Hold clutch hub using JDG747 Compressor Clutch Spanner (A) and remove clutch hub retaining cap screw (B).

4. Remove clutch hub (C). Remove shims (H) from clutch hub and save for installation.

5. Remove and discard pulley snap ring (D). Remove pulley (E) using a plastic hammer or D05277ST Pulley Remover, JDG748 Jaws, and JDG771 Forcing Screw Pilot.

6. Disconnect clutch coil lead wire. Remove and discard clutch coil snap ring (F) and remove the clutch coil (G).

NOTE: The bearing in the pulley is NOT serviceable.

7. Check pulley bearing operation. Replace pulley and bearing as required.

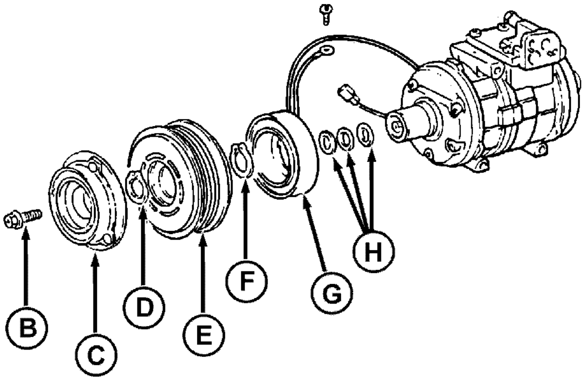
8. Install clutch coil (G) and new clutch coil snap ring (F) with flat side of snap ring down. Connect clutch coil lead wire.

9. Install pulley (E) and new pulley snap ring (D) with flat side of snap ring down. Apply grease to shims (H) and install to clutch hub (C).

10. Install clutch hub (C) and retaining cap screw (B), and tighten to specification. Install dust cover.

Specification	
Clutch Hub Retaining Cap Screw—Torque	14 N•m (10 lb-ft)

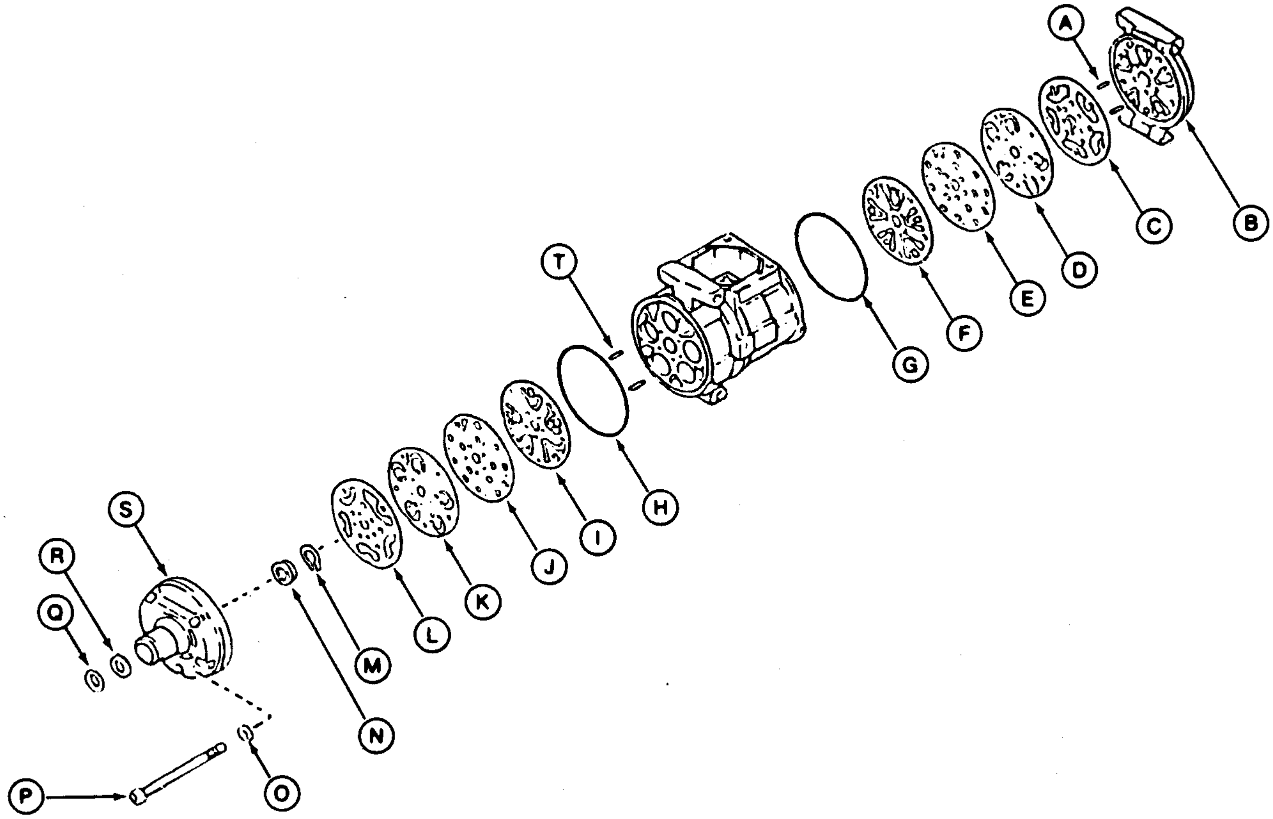
11. Check clutch hub clearance. (See Check Compressor Clutch Hub Clearance in Section 90, Group 20.)



RW21158 –UN–29JUL98

A—JDG747 Compressor Clutch Spanner
B—Clutch Hub Retaining Cap Screw
C—Clutch Hub
D—Pulley Snap Ring
E—Pulley
F—Clutch Coil Snap Ring
G—Clutch Coil
H—Shim

Disassemble, Inspect, and Assemble Compressor



RW21161 –UN–24JUN92

A—Rear Pins
B—Rear Housing
C—Rear Gasket
D—Rear Discharge Reed Valve
E—Rear Valve Plate
F—Rear Suction Reed Valve
G—Rear O-Ring
H—Front O-Ring
I—Front Suction Reed Valve
J—Front Valve Plate
K—Front Discharge Reed Valve
L—Front Gasket
M—Snap Ring
N—Seal
O—Washer
P—Through Bolt
Q—Felt Holder
R—Felt
S—Front Housing
T—Front Pins

1. Clean compressor, using solvent, before disassembly. Mount compressor on holding fixture and remove clutch. (See Disassemble and Assemble Compressor Clutch in Section 90, Group 20.)

IMPORTANT: When removing front and rear housing, be careful NOT to damage sealing surfaces.

2. Disassemble compressor, as illustrated, and discard O-rings, gaskets, seal, snap ring, and through bolt washers. Replace parts.

NOTE: Valve plates, reed valves, cylinders, and cylinder housing are NOT serviceable. Some cylinder scuffing (light scratches) is normal.

3. Inspect valves for an even wear pattern, and cylinders for scoring or excessive wear. Replace compressor as required.

4. Remove shaft seal snap ring (M). Turn housing over and remove felt holder (Q) and felt (R) from front housing (S).

Continued on next page

5. Remove shaft seal (N) from front housing (S) using a small tool with 16 mm (5/8 in.) OD.

6. Wash all parts in clean solvent and dry, using moisture-free compressed air before assembly.

Continued on next page

OUO1023,0002762 –19–20OCT05–2/4

IMPORTANT: Lubricate O-rings, gaskets, and seal using only TY22025 (R134a) Refrigerant Oil during assembly. Other oils could damage the compressor.

7. Apply R134a oil to the bore of the front housing and install new seal (N) to the bottom of the bore using a socket. Install new snap ring (M) flat side down.

IMPORTANT: Bushing spacer (U) must be in position before assembling the compressor.

8. Install pins (A) and new O-ring (G) in the rear cylinder.

NOTE: The rear valve plate is marked with an "R" and is installed face up.

9. Install parts (F—D) over the pins on the rear cylinder.

10. Install a new rear gasket (C) flat side down and the rear housing (B) on the rear cylinder. Mount the compressor onto the holding fixture.

11. Install front pins (T) and new front O-ring (H) in the front cylinder.

NOTE: The front valve plate is marked with an "F" and is installed face up.

12. Install parts (I—K) over the pins on the front cylinder.

13. Install a new front gasket (L) flat side down. Put JDG746 Compressor Seal Protector on the shaft and lubricate with R134a Refrigerant Oil.

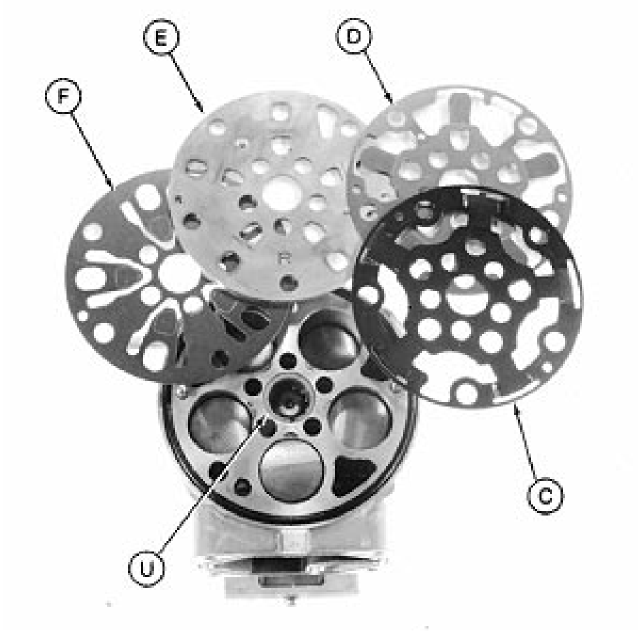
14. Install the front housing (S) on the front cylinder and remove seal protector. Install through bolts (P) and new washers (O).

15. Partially tighten through bolts, and then tighten to specification.

Specification	
Compressor Through Bolt— Torque	26 N•m (19 lb-ft)

16. Install the felt (R) and felt holder (Q) using the clutch hub.

RW21162 –UN–24JUN92



RW21163 –UN–24JUN92

C—Rear Gasket
D—Rear Discharge Reed Valve
E—Rear Valve Plate
F—Rear Suction Reed Valve
U—Bushing Spacer

Continued on next page

17. Install the pulley-clutch hub and check clearance. (See Disassemble and Assemble Compressor Clutch in Section 90, Group 20.)

IMPORTANT: To prevent damage, flush the complete air conditioning system and install a new receiver-dryer.

18. Flush the complete system before installing repaired compressor. (SeeFlush Air Conditioning System in this group.)

19. Install a new receiver-dryer. (SeeReplace Air Conditioning Receiver/Dryer in this group.

20. Add correct amount of oil before installing compressor. (See Refrigerant Oil Information in Section 90, Group 20.)

OUO1023,0002762 –19–20OCT05–4/4

Check Compressor Clutch Hub Clearance

NOTE: The clutch coil is NOT polarity sensitive.

1. Check pulley-to-clutch-hub clearance using a dial indicator. Mount the gauge to the pulley as illustrated and connect a set of jumper wires from the compressor to a 12-volt battery.

2. Rotate the pulley and check for proper clearance specification in three equally spaced locations around the clutch hub. Add or remove shims as required.

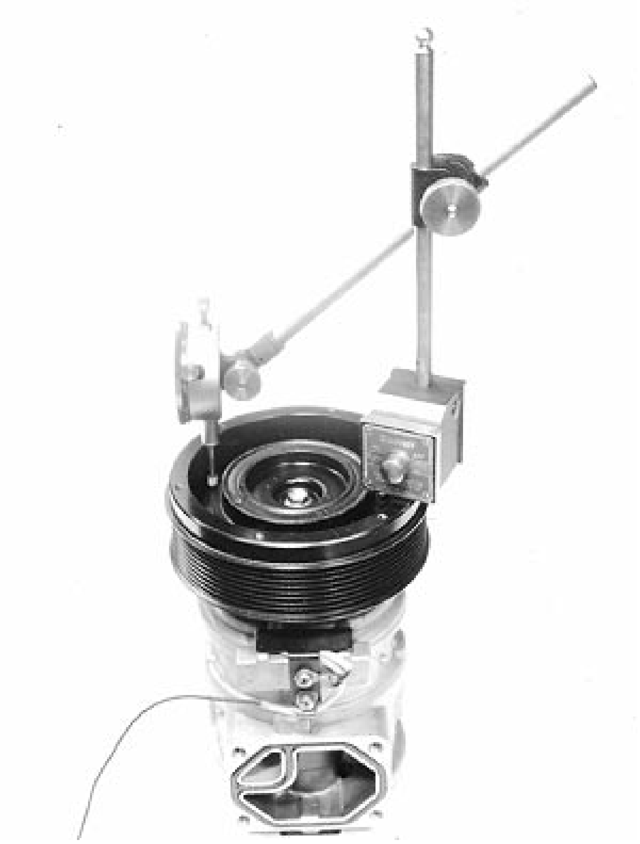
Specification

Hub-to-Pulley—Clearance .... 0.35—0.65 mm (0.014—0.026 in.)

3. Tighten clutch hub retaining cap screw to specification after correct clearance is obtained.

Specification

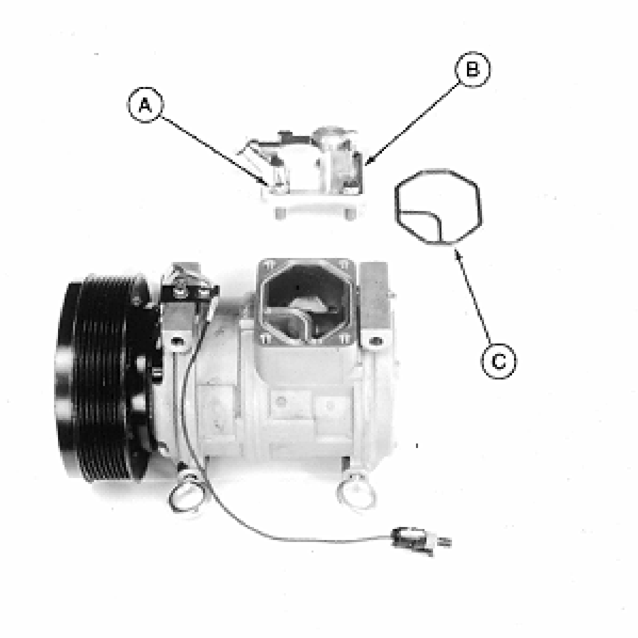
Clutch Hub Retaining Cap Screw—Torque .... 14 N•m (10 lb-ft)



RW21159 –UN–24JUN92

JG31785,00003BE –19–21JAN05–1/1

Inspect Compressor Manifold



RW21160 –UN–24JUN92

1. Remove cap screws (A) and manifold (B).
2. Remove and discard manifold seal (C). Inspect porting surfaces.

NOTE: Lubricate new manifold seal with R134a refrigerant oil.

3. Lubricate and install a new manifold seal (C).
4. Install manifold (B) and tighten manifold cap screws (A) to specification.

Specification

Manifold Cap Screw—Torque	26 N•m (19 lb-ft)

A—Cap Screw (4 used)
B—Manifold
C—Manifold Seal

JG31785,00003BA –19–20JAN05–1/1

Remove and Install Compressor Relief Valve

CAUTION: High pressure may exist at the discharge fitting. If this pressure is released too rapidly, there may be considerable discharge of refrigerant and oil.

1. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

2. Slowly remove relief valve (A) from compressor.

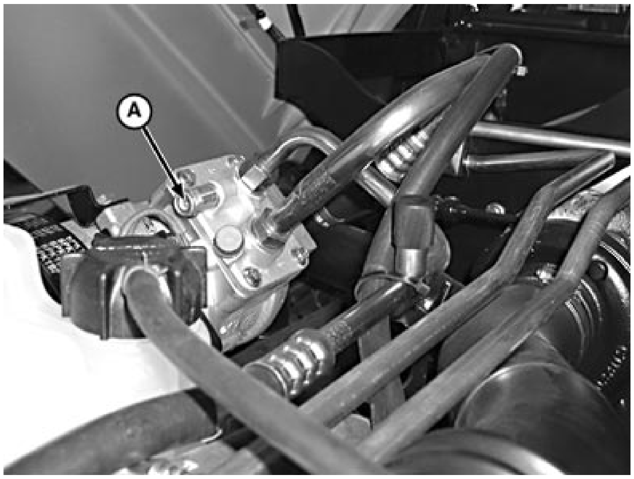
NOTE: The relief valve is not serviceable. Replace valve as required.

3. Install relief valve (A) and tighten to specification.

Specification

Compressor Relief Valve—
Torque .... 12—16 N•m (9—12 lb-ft)

4. Charge the system. (See Charge Air Conditioning System in Section 90, Group 20.)



LV12136 –UN–21JAN05

A—Relief Valve

JG31785,00003B9 –19–20JAN05–1/1

Remove and Install HVAC Housing Cover

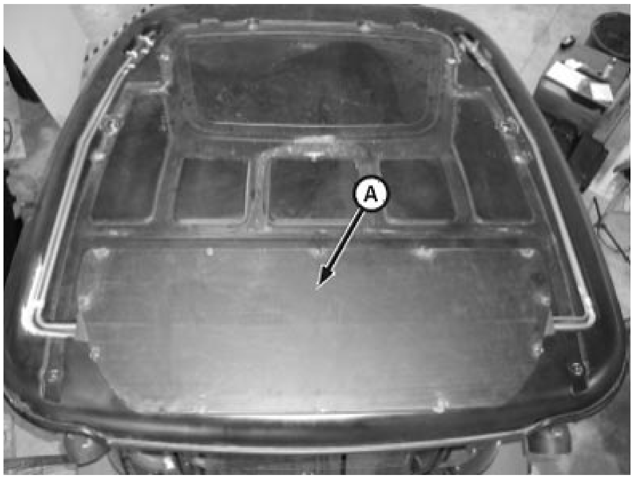
1. Remove screws and HVAC cover (A).

2. Make repairs as necessary.

3. Check HVAC cover seal, replace if needed.

4. Install screws and HVAC cover (A).

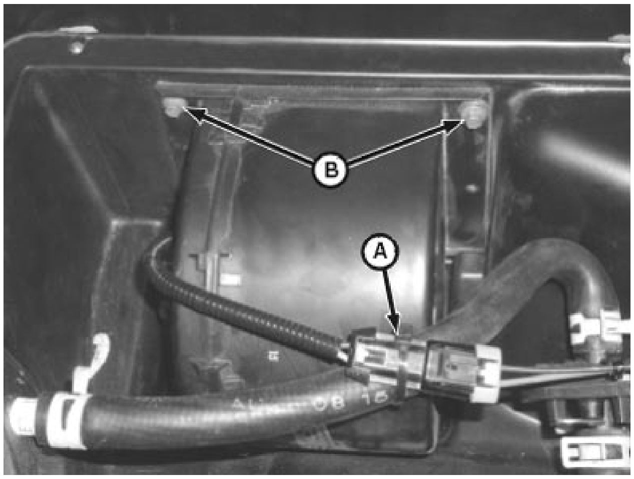
A—HVAC Cover



LV6940 –UN–11MAY01

JG31785,00003B5 –19–20JAN05–1/1

Remove Blower Motors



LV6941 –UN–11MAY01

1. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

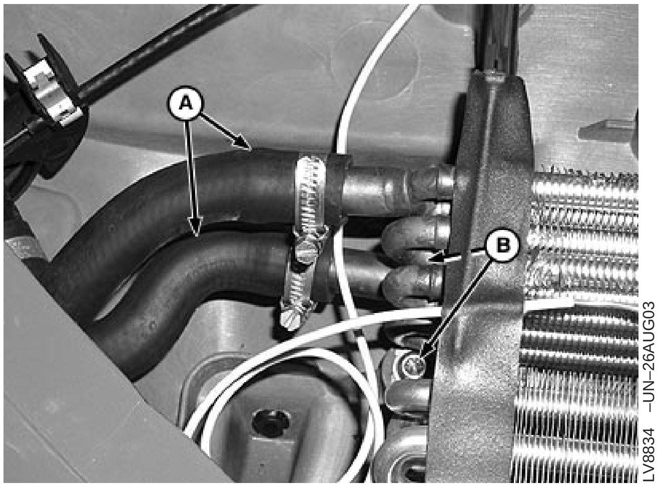
2. Disconnect blower motor wiring connector (A).

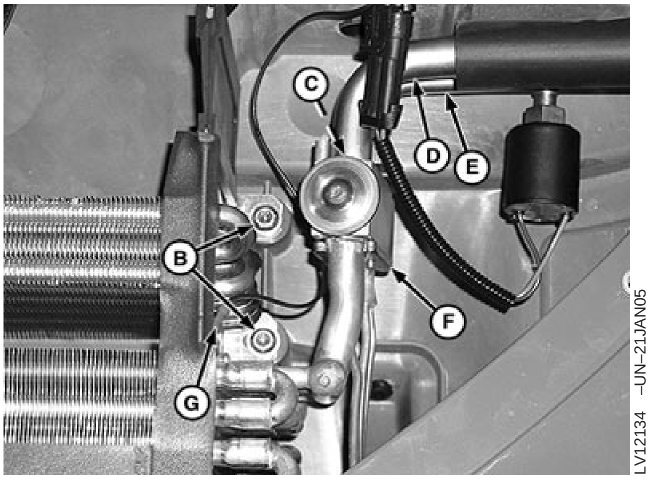
3. Remove two screws (B) and blower motor. Repeat this procedure for right-side blower motor, if removal is necessary.

A—Wiring Connector
B—Screw (2 used)

JG31785,00003B6 –19–20JAN05–1/1

Remove Evaporator/Heater Core





A—Coolant Hose (2 used)
B—Screw (4 used)
C—Socket Head Screw
D—A/C Line
E—A/C Line
F—Expansion Valve
G—Ground Wire

1. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)
2. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

⚠ **CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.**

Shut off engine. Remove radiator filler cap only when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing cap completely.

3. Drain approximately 7.6 L (2 gal) coolant from radiator.
4. Disconnect battery, negative (—) cable first.

NOTE: Close all openings using caps and plugs.

5. Disconnect coolant hoses (A) from heater core.
6. Remove socket head screw (C) and clamping plate. Remove A/C lines (D and E). Close all openings using caps and plugs to prevent contamination.
7. Remove two cap screws (B) from each side of core.
8. Disconnect ground wire lead (G).
9. Lift evaporator/heater core and expansion valve (F) from housing as a unit.
10. Disconnect expansion valve (F) from core. Close all openings using caps and plugs to prevent contamination.

JG31785,00003B7 –19–20JAN05–1/1

Leak Test Evaporator/Heater Core

1. Using JT02098 Air Conditioning R12/R134a Fitting Kit, install JT02106 Test Block using JT02124 and JT02123 Plates, JT02126 and JT02125 Screws, and JT02105 and JT02103 Adapters. Cap one adapter with JT03194. Connect shop air to other adapter.

2. Apply shop air pressure and spray surface using 50-50 mixture of liquid soap and water to check for leaks.

NOTE: Minor leaks may be repaired, but evaporator/heater core should be replaced if there is a major leak or restriction.

3. Repair or replace evaporator/heater core as required.

JG31785,00003BF –19–21JAN05–1/1

Install Evaporator/Heater Core

1. Make sure evaporator/heater cavity drain outlets are not plugged.

2. Flush evaporator core if evaporator was air tested.

3. If evaporator was completely flushed or replaced with a new unit, and no major system leaks were found, add 60 mL (2.0 oz) of R134a Refrigerant Oil before installation. If leaks are found in the system, check refrigerant oil charge. (See Determine Correct Refrigerant Oil Charge in Section 90, Group 20.)

NOTE: Install new O-rings at all A/C connections during assembly. Used or damaged O-rings will leak.

4. Attach expansion valve (F) to the evaporator core.

5. Install evaporator/heater core in housing and tighten screws (B).

6. Connect A/C lines (D and E) to expansion valve (F) and install clamping plate using socket head screw (C).

7. Connect coolant hoses (A) to heater core.

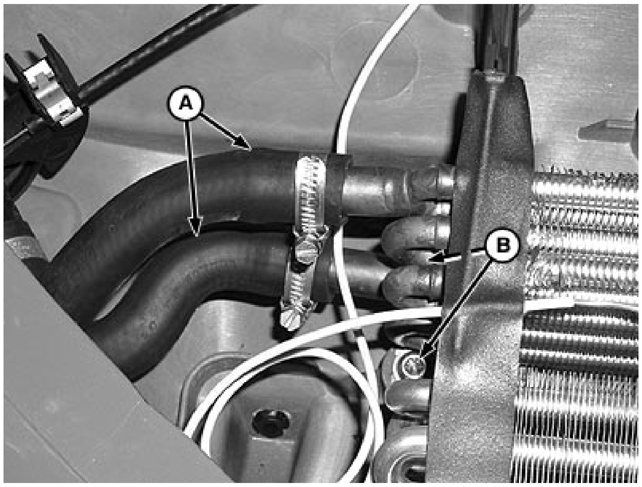
8. Connect ground wire lead (G).

9. Connect battery, negative (—) cable last.

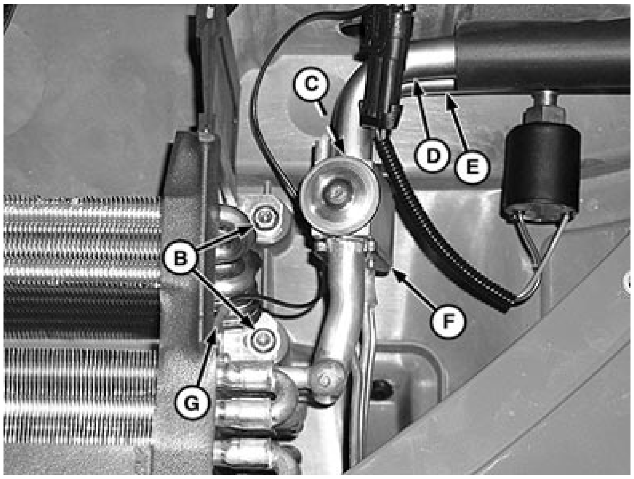
10. Add coolant to radiator as necessary. Start engine and run the heating system to check for leaks. Check coolant level again and add as necessary.

11. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

12. Charge air conditioning system. (See Charge Air Conditioning System in Section 90, Group 20.)



LV8834 –UN–26AUG03



LV12134 –UN–21JAN05

A—Coolant Hose (2 used)
B—Screw (4 used)
C—Socket Head Screw
D—A/C Line
E—A/C Line
F—Expansion Valve
G—Ground Wire

JG31785,00003B8 –19–20JAN05–1/1

Service Expansion Valve

NOTE: The expansion valve is assembled to the evaporator/heater core prior to installation and is removed as a unit.

1. Remove expansion valve. (See Remove Evaporator/Heater Core in Section 90, Group 20.)

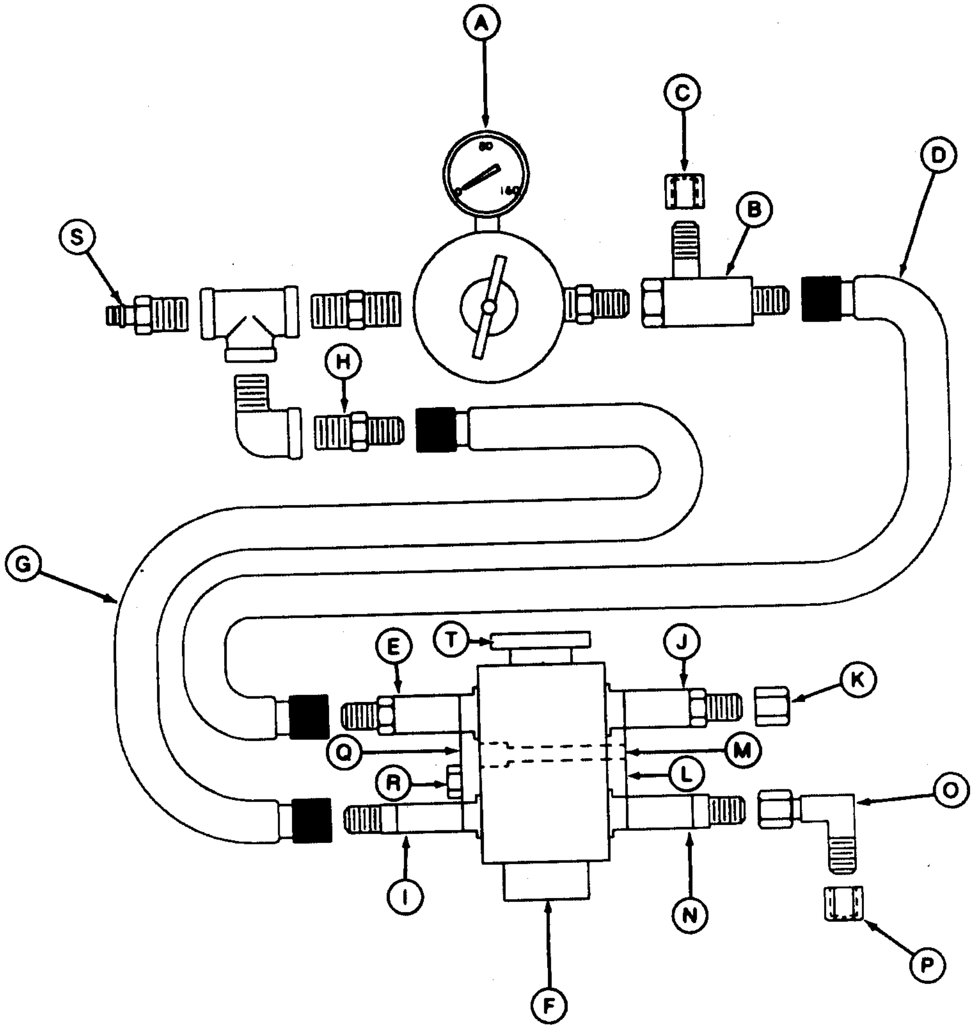
2. Test expansion valve. (See Expansion Valve Bench Test in Section 90, Group 20.)

3. Replace expansion valve as required and assemble to evaporator/heater core.

4. Install expansion valve and evaporator/heater core as a unit in the cab roof. (See Install Evaporator/Heater Core in Section 90, Group 20.)

JG31785,00003C0 –19–21JAN05–1/1

Expansion Valve Bench Test



RW40024 –UN–27AUG93

A—Regulator
B—Tee (JT03191)
C—Orifice Cap (JT02111)
D—Hose (JT02109)
E—Tube (JT02105)
F—Expansion Valve
G—Hose (JT02108)
H—Regulator Inlet (#218887)
I—Tube (JT02103)
J—Tube (JT02105)
K—Cap (JT03194)
L—Plate (R115927/JT02123)
M—Screw (AT127259/JT02125)
N—Tube (JT02109)
O—Elbow (JT05483)
P—Orifice Cap (JT02111)
Q—Plate (L77942/JT02124)
R—Screw (M67175/JT02126)
S—Air Inlet Tee Assembly (JT02112)
T—Power Head

1. Connect expansion valve (F) to regulator (A) that is capable of 820 kPa (8.2 bar) (120 psi).

    - Install tee (B) with 0.020 in. orifice cap (C) at regulator outlet.
    - Connect blue hose (D) between tee (B) and tube (E) on inlet side of expansion valve (F).
    - Connect red hose (G) between elbow of regulator inlet (H) and tube (I) of expansion valve inlet.
    - Install tube (J) with cap (without orifice) (K) on expansion valve outlet. Secure tubes with plate (L) and screws (M).

Continued on next page

- Install tube (N) with 90° elbow (O) and orifice cap (P) on expansion valve outlet. Secure tubes with plate (Q) and screw (R).

NOTE: Both orifice caps used must have a 0.020 in. orifice. Any other size will provide false results.

2. Fill container with ice water.

3. Attach regulator assembly to air inlet tee assembly (S) of 620 kPa (6.2 bar) (90 psi) minimum.

4. Adjust regulator until air flowing from outlet side of expansion valve (F) is shut off. Air should stop flowing at 520—590 kPa (5.2—5.9 bar) (75—85 psi).

5. Adjust regulator to approximately 70 kPa (0.7 bar) (10 psi). Hold power head (T) of expansion valve in ice water and slowly adjust regulator to increase pressure. Air flow from orifice cap (P) should stop at 170—240 kPa (1.7—2.4 bar) (25—35 psi).

6. Adjust regulator to 280 kPa (2.8 bar) (40 psi). Valve should close when power head of expansion valve is dipped in ice water. Valve should open after removing valve from water and warming power head.

7. Repeat step 6, adjusting regulator to 480 kPa (4.8 bar) (70 psi).

8. Replace valve if any test failed. Install valve.

9. Perform diagnostic checks. (See Tests and Adjustments in TM2197 Section 290, Group 15.)

JG31785,00003E8 –19–10FEB05–2/2

Refrigerant Oil Information

CAUTION: New compressors are charged with a mixture of nitrogen, R134a Refrigerant, and TY22025 (R134a) Refrigerant Oil. Wear safety goggles and discharge compressor slowly to avoid possible injury.

New compressors contain 230—245 mL (7.7—8.2 fl oz) of new oil. The oil level visible through the suction port is normally below the drive shaft. The amount of trapped oil is 81 mL (2.7 fl oz). Approximately 60 mL (2.0 fl oz) will seep into the cylinders during shipping and storage.

Typically, 21 mL (0.7 fl oz) of oil covers internal surfaces of the compressor exposed to refrigerant gas and cannot be drained.

The oil level will be above the drive shaft when 245 mL (8.2 fl oz) is put in a dry compressor.

The normal operating oil level of a compressor is 30—45 mL (1.0—1.5 fl oz) and cannot be seen through the suction port.

JG31785,00003E1 –19–10FEB05–1/1

Check Compressor Oil Charge

1. Remove compressor. (SeeRemove, Inspect, and Install Air Conditioning Compressor in Section 90, Group 20.)

2. Remove manifold caps and drain oil. Record amount.

NOTE: Save oil if compressor is new.

3. If MORE than 6 mL (0.2 fl oz) of oil was drained and appears normal, or any other components were replaced or flushed, (See Determine Correct Refrigerant Oil Charge in Section 90, Group 20.)

   If LESS than 6 mL (0.2 fl oz) of oil was drained or appears very black:

   - Perform a volumetric efficiency test on compressor to determine serviceable condition. Flush with solvent to internally wash out oil if compressor is serviceable. (See Test Volumetric Efficiency of Compressor in Section 90, Group 20.)
   - Remove, clean, and bench test expansion valve, but do not disassemble valve. (See Expansion Valve Bench Test in Section 90, Group 20.)
   - Remove and discard receiver/dryer. (SeeReplace Air Conditioning Receiver/Dryer in Section 90, Group 20.)
   - Install a new receiver/dryer.
   - Flush complete system. (See Flush Air Conditioning System in Section 90, Group 20.)
   - Install required oil. (See Determine Correct Refrigerant Oil Charge in Section 90, Group 20.)
   - Connect all components.
   - Purge, evacuate, and charge system. (See Evacuate Air Conditioning System and Charge Air Conditioning System in Section 90, Group 20.)

JG31785,00003E2 –19–10FEB05–1/1

Determine Correct Refrigerant Oil Charge

IMPORTANT: Use care in checking and adding oil. Too much oil will reduce cooling capacity. Too little oil will result in poor lubrication of the compressor, leading to early failure.

NOTE: Determine amount of oil charge for system prior to installation of compressor.

Compressors are divided into three categories when determining correct oil charge:

- New compressor.
- Used compressor, not flushed.
- Used compressor, flushed.

1. If complete system, lines, and components were flushed, add correct amount of oil:
   - New compressor contains correct amount of new oil, 230 +15/-0 mL (7.7—8.2 fl oz).
   - Used compressor (drained)
     - Not flushed, add 210 mL (7.1 fl oz) of new oil.
     - Flushed, add 230 +15/-0 mL (7.7—8.2 fl oz) of new oil.
2. If complete system was not flushed, add correct amount of oil for compressor, plus amount of oil for each component serviced:
   - New compressor contains 230 +15/-0 mL (7.7—8.2 fl oz) of new oil. Connect battery to clutch coil and rotate drive shaft to remove all oil. Return 25 mL (.85 fl oz) of oil to compressor.
   - Used compressor (drained)
     - Not flushed, add 40 mL (1.4 fl oz) of new oil.
     - Flushed, add 60 mL (2.0 fl oz) of new oil.

Remove compressor to determine correct oil charge if any components have been removed, drained, and flushed.

Use the following chart as a guide for adding oil:

NOTE: If the complete system was purged with all components in place, the amount of oil lost is negligible.

Component	Oil Charge
Evaporator	60 mL (2.0 fl oz)
Condenser	60 mL (2.0 fl oz)
Receiver/Dryer	15 mL (0.5 fl oz)
Compressor	60 mL (2.0 fl oz)
Hoses	50 mL (1.7 fl oz)

NOTE: Hoses = 2 mL per 30 cm (0.06 fl oz per ft). Approximate total length equals 600 cm (20 ft).

If any section of hose is removed and flushed or replaced, measure length of hose and use the formula to determine correct amount of oil to be added.

IMPORTANT: DO NOT leave the system or R134a compressor oil containers open. Oil easily absorbs moisture.

DO NOT spill R134a compressor oil on acrylic or ABS plastic. Oil will deteriorate these materials rapidly.

Identify R134a oil containers and measures to eliminate accidental mixing of different oils.

JG31785,00003E3 –19–10FEB05–1/1

Add Refrigerant Oil to System

1. Add approximately 170 mL (5.6 fl oz) of R134a Refrigerant Oil through compressor suction port and 85 mL (2.9 fl oz) into discharge port when system has been completely flushed. (See Determine Correct Refrigerant Oil Charge in Section 90, Group 20.)

IMPORTANT: Use only TY22025 (R134a) Refrigerant Oil.

NOTE: Some oil may have to be added through compressor line and fitting.

2. Install manifold to compressor, if removed. Tighten cap screws to specification.

Specification

Manifold Cap Screw—Torque .... 26 N•m (19 lb-ft)

JG31785,00003E4 –19–10FEB05–1/1

System Information

FLUSHING

Flushing the system or a component is a cleaning process using a liquid solvent to wash out oil and debris. Purging is always necessary after flushing to remove solvent from the system or component.

PURGING

Purging the system or a component is a cleaning process using a gas to force liquid from the system. Purging alone will not force refrigerant oil out of the system.

EVACUATING

Evacuating the system is a process to draw air and moisture from the system with a vacuum.

WHEN TO FLUSH AN AIR CONDITIONING SYSTEM

- The compressor has an internal failure.
- No oil remains in used compressor.
- Oil drained from compressor appears or smells overheated.
- System was contaminated with a mixture of refrigerant oils.
- System was left open to the atmosphere long enough for dirt, moisture, or debris to enter the tubing or components.
- System has an internal blockage.

WHEN TO PURGE AN AIR CONDITIONING SYSTEM

- After flushing system with solvent, to prevent oil dilution.
- System was contaminated with nitrogen or two refrigerants.
- System was left open to the atmosphere and flushing could not be performed.
- A repair required installation of new lines, condenser, or evaporator.

SOLVENTS

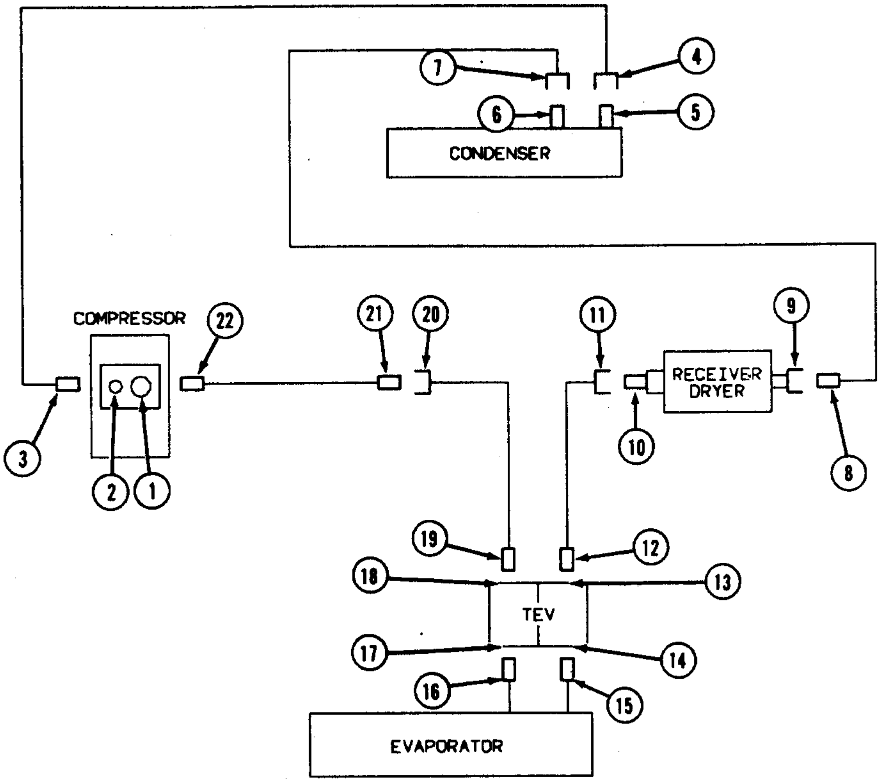
The following three solvents are recommended for flushing air conditioning systems. Each adequately dissolves oil and sludge but at a different rate. Use only solvents with an equivalent MSDS.

- GENESOLV 2004® Solvent
- ART338 A/C Flushing Solvent (JT02077)
- Naphtha 673 Parts Solvent

GENESOLV 2004 is a registered trademark of the Micro Care Corporation (800-638-0125).

JG31785,00003E9 –19–10FEB05–1/1

Flush Air Conditioning System



RW40023 –UN–27AUG93

1—Compressor Manifold Suction Port
2—Compressor Manifold Discharge Port
3—Compressor Discharge Hose Inlet Port
4—Compressor Discharge Hose Outlet Port
5—Condenser Inlet Port
6—Condenser Outlet Port
7—Receiver/Dryer Inlet Hose, Inlet End
8—Receiver/Dryer Inlet Hose, Outlet End
9—Receiver/Dryer Inlet Port
10—Receiver/Dryer Outlet Port
11—Receiver/Dryer Outlet Hose, Inlet End
12—Receiver/Dryer Outlet Hose, Outlet End
13—Expansion Valve Pressure Inlet Port
14—Expansion Valve Pressure Outlet Port
15—Evaporator Inlet Tube
16—Evaporator Outlet Tube
17—Expansion Valve Return Inlet Port
18—Expansion Valve Return Outlet Port
19—Expansion Valve Outlet Hose, Inlet End
20—Expansion Valve Outlet Hose, Outlet End
21—Compressor Inlet Hose, Inlet End
22—Compressor Inlet Hose, Outlet End

Continued on next page

AIR CONDITIONING SYSTEM FITTING—REFERENCE CHART	
Location	**ServiceGuard Number**
Compressor Manifold:	
1. Suction port	JT02099
2. Discharge port	JT02100
Compressor Discharge Hose:	
3. Inlet end	JT02102
4. Outlet end	JT03180 & JT03183
Condenser	
5. Inlet port	JT03195 & JT03181
6. Outlet port	JT03183
Receiver/Dryer Inlet Hose	
7. Inlet end	JT03188
8. Outlet end	JT03197
Receiver/Dryer	
9. Inlet port	JT02110
10. Outlet port	JT03183
Receiver/Dryer Outlet Hose	
11. Inlet end	JT03188
12. Outlet end	JT02106 & JT02104
Expansion Valve Pressure	
13. Inlet port	JT02103
14. Outlet port	JT02104
Evaporator	
15. Inlet tube	JT02106 & JT02103
16. Outlet tube	JT02106 & JT02105
Expansion Valve Return	
17. Inlet port	JT02105
18. Outlet port	JT02105
Expansion Valve Outlet Hose	
19. Inlet end	JT02106 & JT02105
20. Outlet end	JT03187
Compressor Inlet Hose	
21. Inlet end	JT03182
22. Outlet end	JT02101

Review air conditioning system diagram showing adapters used at each hose and component connection.

Add flushing solvent to system with JT02075 Air Conditioning Flushing Unit and JT02078 Flushing Attachment Kit. Use JT02098 Air Conditioning R12/R134a Fitting Kit, and JT02138 Update Kit.

1. Discharge system. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

2. Remove compressor and measure oil drained from both manifold ports.

3. Clean compressor as follows:

   - Pour 240 mL (8 fl oz) of JT02077 Flushing Solvent into suction port and 120 mL (4 fl oz) into discharge port. Plug both ports in compressor manifold, using JT02099 and JT02100 Adapters with JT03194 Caps.

Continued on next page

- Turn compressor end for end and roll it side to side.
- Remove both plugs from manifold ports and drain solvent from compressor.
- Connect battery power to compressor clutch coil. Rotate pulley at least five revolutions to move solvent out of cylinders.
- Invert compressor, roll to all sides, and drain thoroughly.
- Let compressor sit inverted for three to five minutes.
- Repeat previous two steps at least three times.

4. Remove and discard receiver/dryer.

5. Flushing can be performed on tractor. Divide system into two circuits:

   - Condenser, including inlet and outlet hoses (see steps 6—13).
   - Evaporator, including inlet and outlet hoses (see steps 14—30).

IMPORTANT: DO NOT attempt to flush through compressor or receiver/dryer. Flushing through expansion valve or an orifice tube is acceptable if refrigerant oil has a normal odor and appearance.

6. FLUSH/PURGE CONDENSER:

   Connect flusher outlet hose to inlet connection of compressor discharge hose (3) using JT02102 Adapter to flush condenser.

7. Attach a return hose and aerator nozzle to connection of receiver/dryer inlet hose (8) using JT03197 Adapter. Put nozzle in container to collect flushing solvent.

8. Fill flusher tank with 4 L (1 gal) of solvent and fasten all connections.

NOTE: Air pressure must be at least 620 kPa (6.2 bar) (90 psi) for flushing and purging.

9. Connect a supply line of moisture-free compressed air or dry nitrogen to flusher air valve.

10. Open air valve to force flushing solvent into condenser circuit. Flusher tank is empty when hose pulsing stops. Additional flushing cycles are required if system is heavily contaminated with burned oil or metal particles.

11. Purging the condenser circuit takes 10—12 minutes to thoroughly remove solvent.

12. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to a piece of cardboard; continue purging until discharge air on cardboard is dry.

13. Go to step 27 if evaporator does not require flushing.

14. FLUSH EVAPORATOR:

    Remove expansion valve to flush evaporator if system is contaminated with burned refrigerant oil or debris.

    Go to step 23 to flush evaporator through expansion valve if oil appears normal.

    Remove evaporator/heater core housing cover to access expansion valve. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

NOTE: JT02106 Flushing Block, JT02101 Adapter and JT03188 Adapter can be found in JT02098 Air Conditioning R12/R134a Fitting Kit.

15. Install JT02106 Flushing Block in place of expansion valve.

16. Connect flusher outlet hose to compressor suction hose (22) using JT02101 Adapter.

17. Attach a hose and aerator nozzle to receiver/dryer outlet hose (11) connector using JT03188 Adapter. Put nozzle in container to collect flushing solvent.

Continued on next page

18. Repeat steps 8—10 to flush evaporator.

19. Purging the evaporator circuit takes 12—15 minutes to thoroughly remove solvent.

20. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to a piece of cardboard; continue purging until discharge air on cardboard is dry.

21. Reinstall expansion valve, and reconnect heater coolant tubing. Clean up spilled antifreeze in evaporator housing and return coolant to radiator. Install operator seat.

22. Go to step 27.

23. FLUSH EVAPORATOR THROUGH EXPANSION VALVE

    Connect flusher outlet hose to connection of receiver/dryer outlet hose (11) using JT03188 Adapter.

24. Attach a hose and aerator nozzle to connection of compressor suction hose (22) using JT02101 Adapter. Put nozzle in a container to collect solvent.

25. Repeat steps 8—10 to flush evaporator.

26. Repeat steps 19 and 20 to purge evaporator.

27. Install a new receiver/dryer compatible with R134a refrigerant. Fasten connections and mounting brackets.

28. Add required oil. (See Determine Correct Refrigerant Oil Charge in Section 90, Group 20.)

29. Install compressor. Connect refrigerant lines to manifold.

30. Connect clutch coil wire. Install drive belt.

31. Purge system.

JG31785,00003E5 –19–10FEB05–4/4

Evacuate Air Conditioning System

IMPORTANT: Use only R134a refrigerant recovery, recycling, and charging stations. Do not mix R134a equipment, refrigerant, and refrigerant oils with R12 systems to prevent compressor damage.

1. Connect JT02046 HFC134a Charging Station.

NOTE: A JT02047 R134a Refrigerant Recovery, Recycling, and Charging Station can be substituted for the JT02046.

Pump must be capable of pulling at least 72.6 cm Hg (28.6 in. Hg) vacuum at sea level. Deduct 2.54 cm Hg (1 in. Hg) from 75.9 cm Hg (29.9 in. Hg) for each 300 m (1000 ft) elevation above sea level.

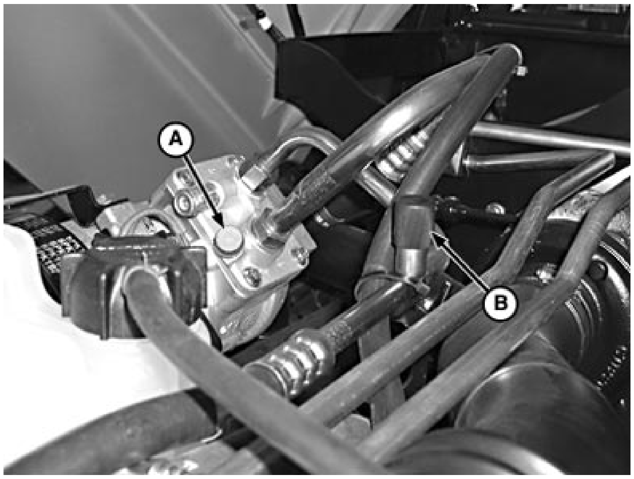
2. Connect low-side hose (blue) from charging station to suction fitting (A) on compressor. Connect high-side hose (red) to discharge fitting (B) on discharge line.

IMPORTANT: Do not operate compressor during evacuation.

3. Follow manufacturer’s instructions and evacuate system. Evacuate system for 15 minutes if ambient temperature is below 30°C (85°F) to remove nitrogen and air.

   Evacuate system for 30 minutes if ambient temperature is above 30°C (85°F).

4. Charge system. (See Charge Air Conditioning System in Section 90, Group 20.)



LV12108 –UN–19JAN05

A—Suction Fitting (Low-Side)
B—Discharge Fitting (High-Side)

JG31785,00003E6 –19–10FEB05–1/1

Charge Air Conditioning System

1. Evacuate system. (See Evacuate Air Conditioning System in Section 90, Group 20.)

IMPORTANT: Use only R134a refrigerant recovery, recycling, and charging stations. Do not mix R134a equipment, refrigerant, and refrigerant oils with R12 systems to prevent compressor damage.

2. Connect JT02046 HFC134a Charging Station to charge system.
3. Connect low-side hose (blue) to suction fitting on compressor. Connect high-side hose (red) to discharge fitting on discharge line.

IMPORTANT: Do not run engine. System must hold a minimum vacuum of 72.6 cm Hg (28.6 in. Hg). Deduct 2.54 cm Hg (1 in. Hg) from 75.9 cm (29.9 in.) for each 300 m (1000 ft) elevation above sea level.

4. Follow manufacturer's instructions and charge system.
5. Weigh refrigerant supply tank and invert so refrigerant enters system as a liquid.
6. Begin charging through discharge port first. As suction pressure nearly equals discharge pressure, open suction valve.

IMPORTANT: Close discharge valve on gauge manifold before starting engine and compressor, to prevent over-pressurizing refrigerant container.

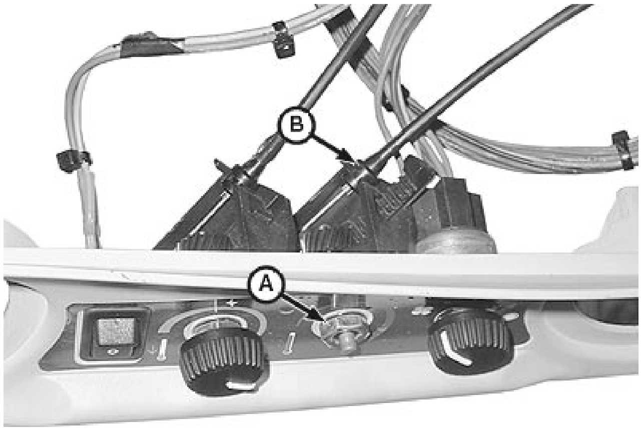
7. Continue charging system until 1.58 kg (3.50 lb) is installed. Start engine to complete charging system if a heated cylinder is not being used.
8. Close both gauge manifold valves and perform a system operational check as follows:

- Engine at 2000 rpm. Close door and all windows.
- Compressor operating with temperature control at maximum cooling and blower at purge.
- Check ambient air temperature and cab air duct temperature, along with suction and discharge pressures. Compare to the temperature-pressure chart and temperature drop specifications. (See Tests and Adjustments in TM2197 Section 290, Group 15).

JG31785,00003E7 –19–10FEB05–1/1

Replace Heater Temperature Control Cable

1. Disconnect battery negative (—) cable.
2. Pull vent covers and retaining rings from cab control console. Remove three mounting screws located behind vent covers and pull cab control console from headliner.
3. Remove heater control knob.
4. Remove nut (A).
5. Disconnect control cable (B).



LV6944 –UN–14MAY01

A—Nut
B—Control Cable

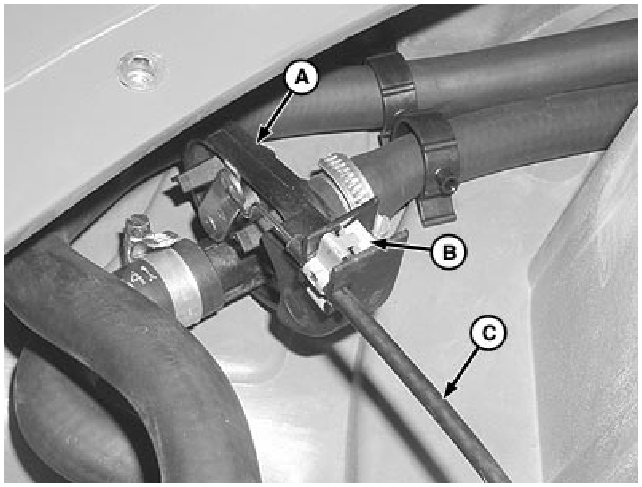
JG31785,00003D6 –19–08FEB05–1/4

6. Remove HVAC access cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)
7. Remove cable retaining clip (B) and disconnect control cable (C) from heater control valve (A).

NOTE: Follow routing path of control cable before removing to aid during installation.

8. Replace heater control cable (C).

A—Heater Control Valve
B—Clip
C—Control Cable



LV8836 –UN–26AUG03

Continued on next page

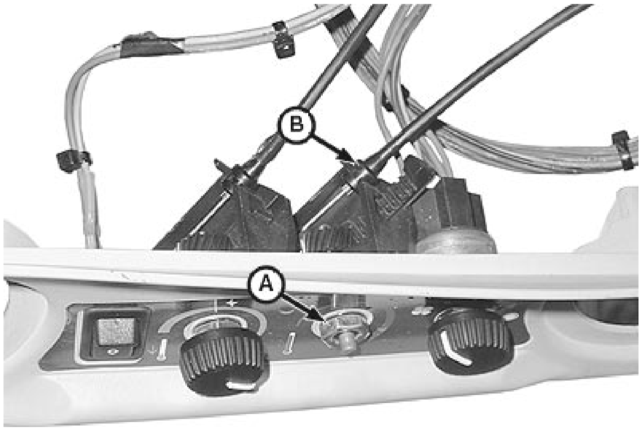
JG31785,00003D6 –19–08FEB05–2/4

9. Connect cable (B) and tighten nut (A).

10. Install control panel and screws.

11. Install heater control knob.

A—Nut
B—Control Cable



LV6944 –UN–14MAY01

JG31785,00003D6 –19–08FEB05–3/4

NOTE: Make sure the heater control knob and the heater control valve (A) are in the closed position as shown before installing clip (B).

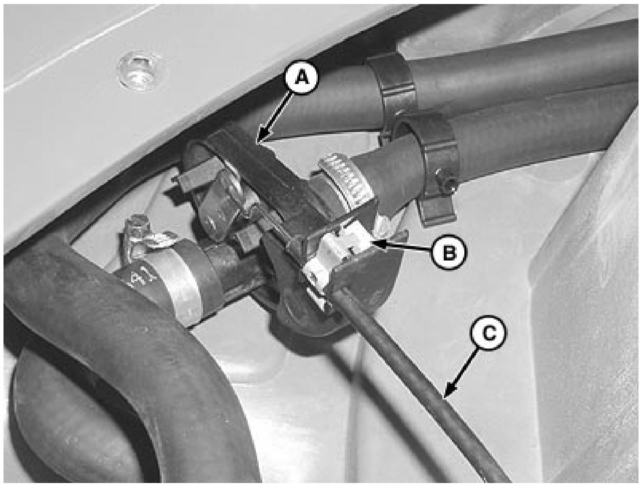
12. Connect cable (C) and install clip (B).

13. Adjust heater control cable. (See Reference 290-15-007, Adjust Heater Temperature Control Cable in TM2197 Section 290, Group 15.)

14. Install HVAC access cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

15. Connect battery negative (—) cable.

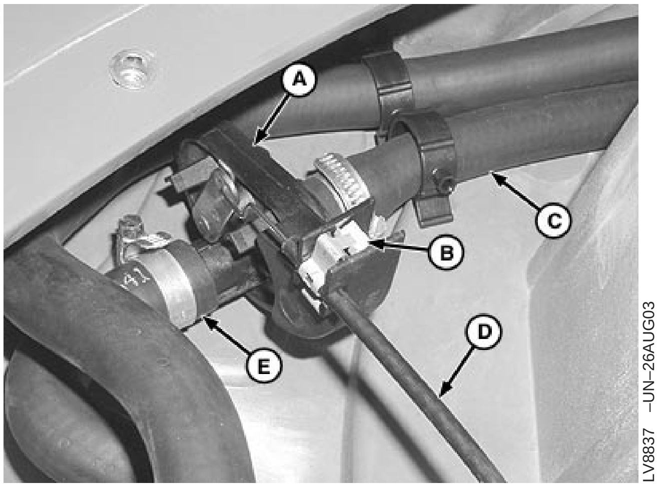
A—Heater Control Valve
B—Clip
C—Control Cable



LV8836 –UN–26AUG03

JG31785,00003D6 –19–08FEB05–4/4

Remove Heater Control Valve



1. Remove HVAC access cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)

NOTE: A small amount of coolant will leak out of valve and heater core.

2. Disconnect hoses (C and E).
3. Remove clip (B) and disconnect control cable (D).
4. Remove heater control valve (A) and test for leakage (See Leak Test Heater Control Valve in Section 90, Group 25.)

A—Heater Control Valve
B—Clip
C—Heater Valve Inlet Hose
D—Control Cable
E—Heater Valve Outlet Hose

JG31785,00003D7 –19–08FEB05–1/1

Leak Test Heater Control Valve

1. Connect water pressure hose to control valve inlet and turn the valve arm to closed position.
2. Turn water pressure on and check for leakage from the valve outlet.

NOTE: The heater control valve is not serviceable.

3. Replace valve as required.

JG31785,00003D8 –19–08FEB05–1/1

Install Heater Control Valve

1. Inspect heater hoses and replace as necessary.

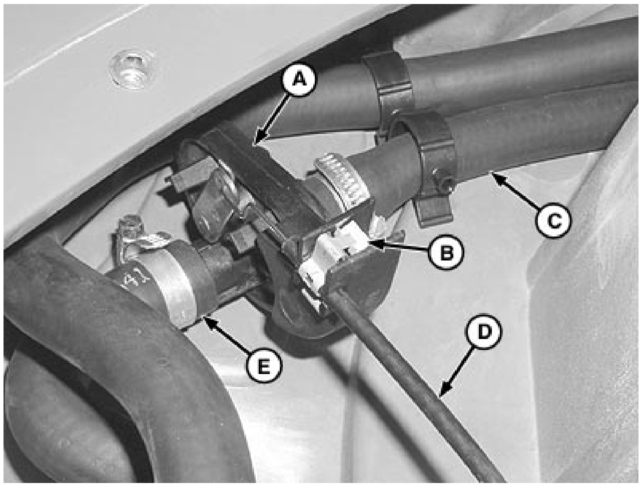
NOTE: Make sure the heater control knob and the heater control valve are in the closed position before connecting cable.

2. Install heater control valve (A) and connect heater control cable (D) and hoses (C and E).

3. Adjust heater control cable. (See Reference 290-15-007, Adjust Heater Temperature Control Cable in TM2197 Section 290, Group 15.)

4. Add coolant to radiator if necessary. Start engine and run the heating system to check for leaks.

5. Install HVAC access cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 20.)



A—Heater Control Valve
B—Clip
C—Heater Valve Inlet Hose
D—Control Cable
E—Heater Valve Outlet Hose

JG31785,00003D9 –19–08FEB05–1/1

Section 99

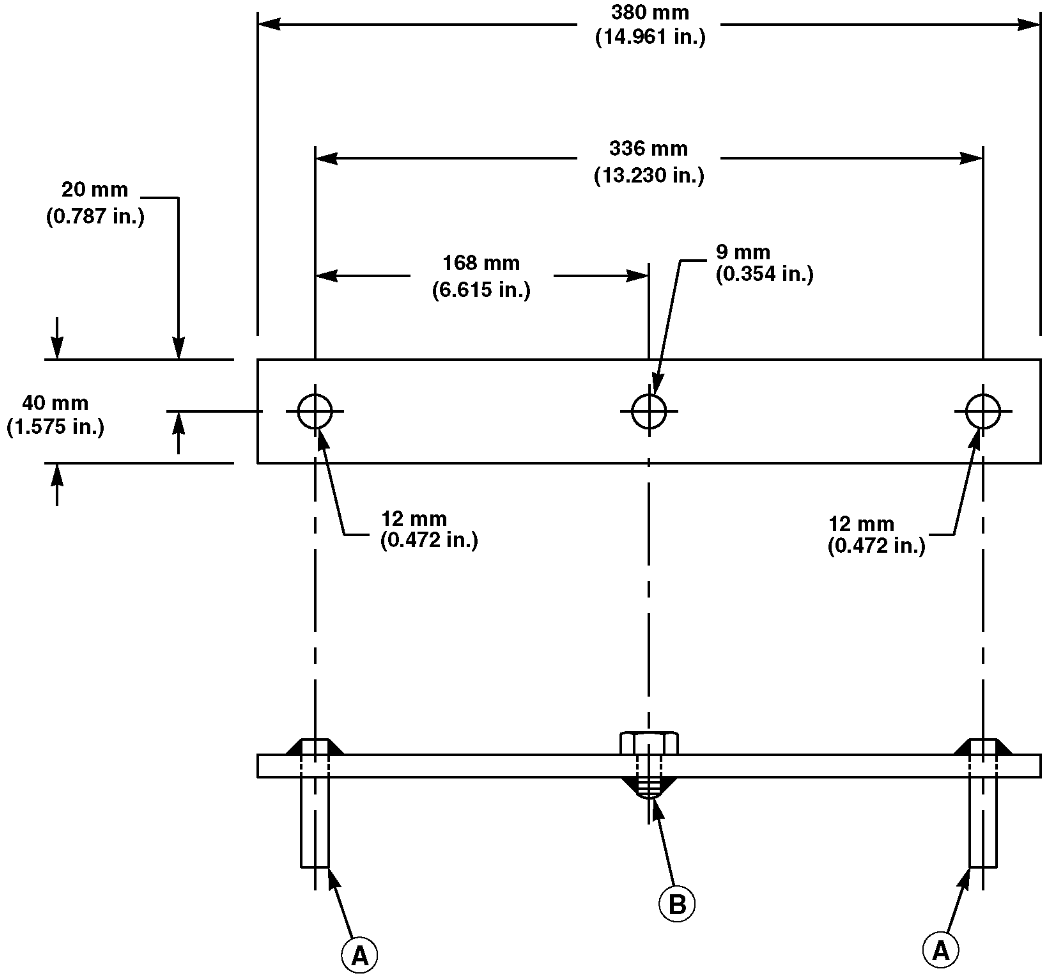
Dealer Fabricated Tools

Contents

Page

Group 05—Dealer Fabricated Tools
DFLV1A—Final Drive Turning Tool 99-05-1
DFRW20—Compressor Holding Fixture 99-05-2
DFRW83—Nozzle Assembly 99-05-3
DFT1162—Snap Ring Removal Tool 99-05-4

DFLV1A—Final Drive Turning Tool


380 mm
(14.961 in.)
336 mm
(13.230 in.)
20 mm
(0.787 in.)
168 mm
(6.615 in.)
9 mm
(0.354 in.)
40 mm
(1.575 in.)
12 mm
(0.472 in.)
12 mm
(0.472 in.)
A
B
A

LV12304 –UN–25FEB05

A—Rod **B—Cap Screw**

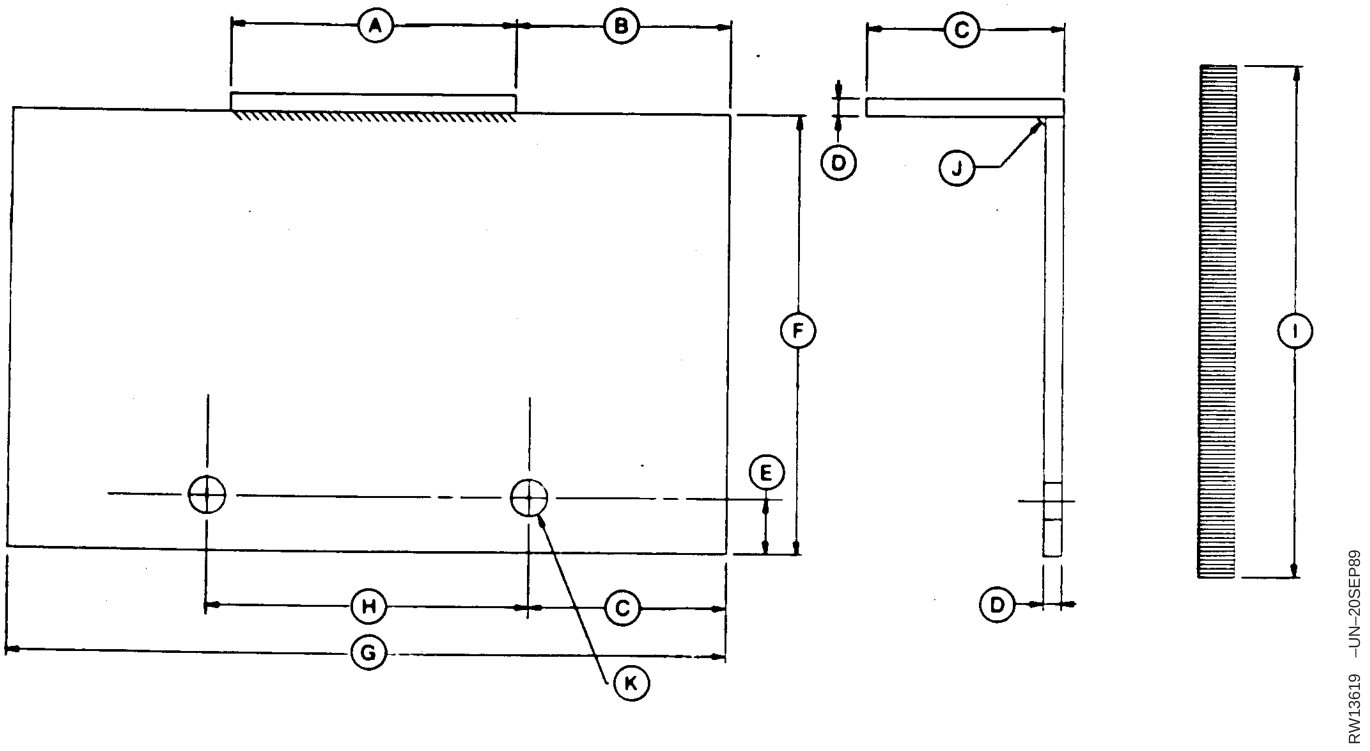
Use: Tool is used to rotate final drive housing to determine rolling drag torque.

Material Required:

- 40 x 10 x 380 mm (1.575 x 0.394 x 14.961 in.) Flat Steel Stock
- 12 x 50 mm long (0.472 x 1.969 in. long) Round Steel Stock (2 used)
- M8 x 15 mm Cap Screw
- Drill two 12 mm (0.472 in.) and one 9 mm (0.354 in.) holes as shown
- Weld rods (A) and cap screw (B) to flat steel stock as shown

JG31785,00003DB –19–08FEB05–1/1

DFRW20—Compressor Holding Fixture



A—102 mm (4 in.)
B—76 mm (3 in.)
C—70 mm (2.75 in.)
D—6.4 mm (0.25 in.)
E—19 mm (0.75 in.)
F—152 mm (6 in.)
G—254 mm (10 in.)
H—114 mm (4.5 in.)
I—12.7 mm (0.5 in.) x 178 mm (7 in.) Threaded Rod
J—Weld
K—12.7 mm (0.5 in.) Hole (2 used)

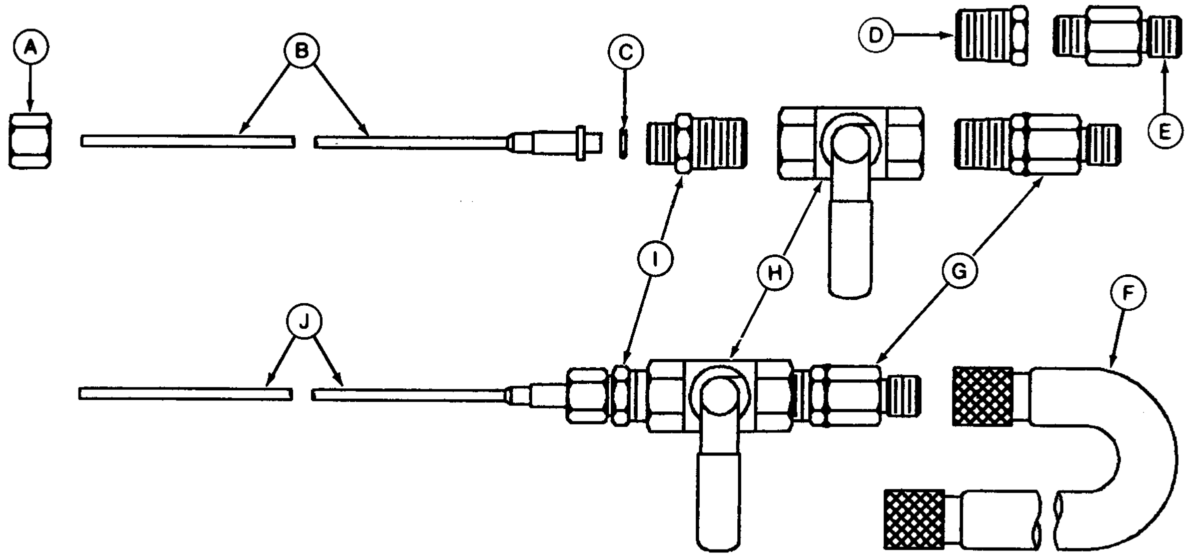
Use: Tool is used to hold air conditioner compressor during disassembly and assembly.

Material Required:

- 2—Steel Plates (4 x 2.27 in.) and (10 x 6 in.)
- 2—Threaded Steel Rods (0.5 x 7 in.)
- 4—Matching Lock Washers and Nuts
- 2—Eye Bolts (6 x 1/4 in.)
- 2—Matching Washers and Nuts

JG31785,00003DC –19–08FEB05–1/1

DFRW83—Nozzle Assembly



RW22576 –UN–24SEP93

A—Fitting	**D—JT03232 Adapter**	**G—R134a Refrigerant Hose Adapter**	**I—Compression Adapter (W/O Sleeve)**
B—Pressure Sensing Tube	**E—JT02219 Fitting**	**H—Gas Shut-Off Valve**	**J—Nozzle**
C—O-Ring	**F—R134a Refrigerant Hose**		

Use: To apply refrigerant 134a while testing expansion valve operation on tractors with refrigerant 134a.

NOTE: Do NOT use a shop air blow gun because the stem is not sealed. Refrigerant will leak out around the stem when the valve is opened.

Materials Requried: Refer to the following materials required to fabricate the nozzle assembly.

Use a pressure sensing tube (B) with an O-ring (C) and fitting (A) from a non-functional R12 thermal expansion valve to make nozzle (J).

Brass compression adapter (I) is a 1/4 (male) NPT by 1/4 tube adapter available at local hardware stores. The sleeve from the adapter is not required.

Gas shut-off valve (H) is 1/4 (female) NPT at both ends, available at local hardware stores.

R134a refrigerant hose adapter (G) is cut off from an empty R134a tank and is brazed to a 1/8 in. (female) NPT by 1/4 in. (male) NPT adapter (D).

NOTE: JT03232 1/8 in. (female) NPT by 1/4 in. (male) NPT Adapter (D) and JT02219 1/8 in. (male) NPT by 1/2-16 Acme fitting (E) may be used to make hose adapter (G).

R134a refrigerant hose (F) can be purchased from SERVICEGARD™ or local supplier and should be 61—91 cm (24—36 in.) long.

Use by connecting the DFRW83 Nozzle Assembly to a refrigerant R134a source using hose (F), to apply refrigerant to expansion valve. Control flow of refrigerant using both valve on refrigerant source and shutoff valve (H).

SERVICEGARD is a trademark of Deere & Company

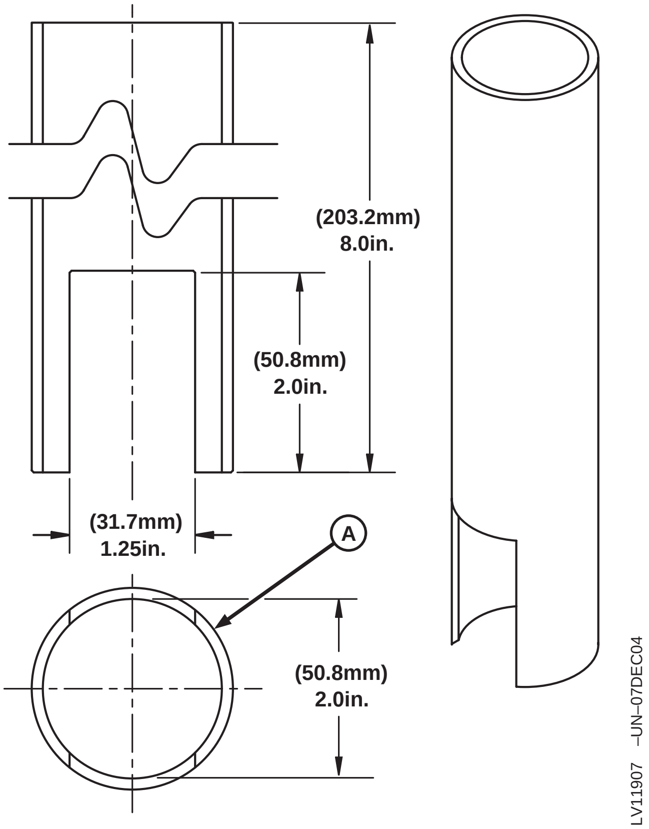
JG31785,00003DD –19–08FEB05–1/1

DFT1162—Snap Ring Removal Tool

Use: Tool is used to remove and install snap ring from MFWD drop gearbox output shaft, and PTO pinion shaft.

Material Required:

- 2 in. ID x 8 in. Long Pipe


(203.2mm)
8.0in.
(50.8mm)
2.0in.
(31.7mm)
1.25in.
A
(50.8mm)
2.0in.
LV11907 –UN–07DEC04

A—Fabricated Tool

JG31785,00003DA –19–08FEB05–1/1

Index

Page

A

Abbreviations 10-10-37
A/C
  On/off switch, replace 40-10-44
A/C temperature control switch
  Replace 40-10-45
Adjustment
  Differential backlash 50-25-15
  Differential cone point 50-25-14
Air cleaner
  Remove, inspect, and install elements 30-10-2
Air conditioning
  Compressor, remove, inspect and install. 90-20-11
  Condenser, remove, inspect and install. . . .90-20-8
  Receiver/dryer, replace 90-20-7
  Refrigerant, recover and recycle 90-20-6
  System information 90-20-34
Air conditioning high/low pressure switch
  Replace 40-10-47
Air conditioning system
  Charge procedure 90-20-40
  Compressor, oil charge check. 90-20-31
  Evacuate procedure 90-20-39
  Expansion valve, bench test 90-20-28
  Flush procedure .90-20-35
  Refrigerant oil, addition of 90-20-33
  Refrigerant oil, charge determination. 90-20-32
  Refrigerant oil, information 90-20-30
Air Filter
  Cab exterior, remove, inspect and install . .90-15-4
Air filter restriction switch
  Replace 40-10-2
Air Filters
  Cab interior, remove, inspect and install . . .90-15-3
Air intake system
  Install turbocharger—4-cylinder. 30-10-5
  Install turbocharger—5-cylinder. 30-10-7
  Remove turbocharger—4-cylinder. 30-10-4
  Remove turbocharger—5-cylinder. 30-10-6
  Turbocharger break-in. 30-10-8
  Turbocharger repair 30-10-1
Alternator/regulator
  Replace, 4-cylinder engines 40-05-5
  Replace, 5-cylinder engines 40-05-6
Antenna
  Replace 40-10-10
Assembly
  Axle housing, MFWD—remove and install. 50-35-17
  Axle housing, MFWD—repair 50-35-2
  Axle housing, 2WD, remove and install. . . .80-05-2
  Clutch, POWRREVERSER—Assemble. . . .50-11-6
  Clutch, POWRREVERSER—disassemble and inspect. 50-11-4
  Clutch, POWRREVERSER—remove and install. 50-11-3
  Clutch, SYNCSHUTTLE—assemble 50-10-14
  Clutch, SYNCSHUTTLE—disassemble and inspect. 50-10-7
  Clutch, SYNCSHUTTLE—remove and install. 50-10-4
  Creeper—disassemble, inspect, and install. 50-40-4
  Creeper—remove and install. 50-40-2
  Differential—disassemble, inspect, and assemble 50-25-6
  Differential—remove and install. 50-25-4
  Electro-hydraulic PTO, rear 540/1000 output shaft—disassemble, inspect, and assemble 50-20-26
  Electro-hydraulic PTO, rear 540/540E output shaft—disassemble, inspect, and assemble 50-20-24
  Electro-hydraulic PTO, rear 540/540E shaft—remove and install 50-20-20
  Final drive, Hi-Crop—remove, inspect, and install. 50-31-6
  Final drive—remove and install 50-30-3
  Gearshift shaft, POWRREVERSER—disassemble, inspect, and assemble . . .50-16-30
  Gearshift shaft, SYNCSHUTTLE—disassemble, inspect, and assemble. 50-15-43
  Hi-Crop axle—remove and install 50-31-2
  Planetary drive—install 50-30-6
  Planetary drive—remove and inspect 50-30-5
  PTO, rear standard and 540/540E, drive shaft—remove and install 50-20-11
  Rear 540/540E PTO, drive shaft—disassemble, inspect, and assemble. 50-20-16
  Standard PTO, rear drive shaft—disassemble, inspect, and assemble. 50-20-12
  Standard PTO, rear 540/1000 drive shaft—disassemble, inspect, and assemble . . .50-20-18
Assembly,
  Axle shaft—remove, inspect, and install . . .50-30-9
Axle
  Hi-Crop—remove and install 50-31-2
Axle housing
  Front, MFWD—remove and install 50-35-17
Axle Housing
  Front, MFWD—repair 50-35-2
  Front, 2WD, remove and install. 80-05-2
Axle repair
  MFWD 60-05-26

Page

Axle shaft
  Assembly—remove, inspect, and install . . .50-30-9

B

Battery
  Remove and install 40-05-2
Belt tensioner
  Inspect and replace—4-cylinder engine. . .20-10-13
  Inspect and replace—5-cylinder engine. . .20-10-15
Blower control switch
  Replace 40-10-44
Blower motor resistor
  Replace 40-10-46
Blower motors
  Remove 90-20-23
Bottom shaft
  POWRREVERSER transmission—disassemble,
    inspect, and assemble. 50-16-32
Brake hydraulic lines
  Inspect and replace. 60-10-18
Brake pedal switch
  Replace, electro-hydraulic tractors 40-10-83
Brake valve
  Assemble 60-10-9
Brake valve and pedals
  Cross section 60-10-8
  Disassemble and inspect 60-10-5
  Remove and install 60-10-3
Brakes
  Install 60-10-15
  Remove and inspect 60-10-12
Break-in engine oil (5425, 5525, 5625 and
  5603) 10-20-6

C

Cab
  Install 90-15-50
  Remove 90-15-33
Cab doors
  Remove and install 90-15-18
Cab exterior
  Air filter, remove, inspect and install 90-15-4
Cab interior
  Air filters, remove, inspect and install 90-15-3
Cab roof
  A/C housing inner roof, remove and
    install. 90-15-22
  Outer, remove and install 90-15-21

Page

Cab roof electrical harness
  Replace 40-15-42
Center control console—5603
  Remove and install 90-06-17
Center link
  Inspect and repair 80-15-6
Charge procedure, air conditioning
  system 90-20-40
Clutch
  POWRREVERSER—PTO clutch finger
    adjustment. 50-11-8
  SYNCSHUTTLE—PTO clutch finger
    adjustment. 50-10-20
  SYNCSHUTTLE—traction clutch finger
    adjustment. 50-10-19
Clutch assembly
  POWRREVERSER—Assemble. 50-11-6
  POWRREVERSER—dissassemble and
    inspect. 50-11-4
  POWRREVERSER—remove and install . . .50-11-3
  SYNCSHUTTLE—assemble 50-10-14
  SYNCSHUTTLE—disassemble and
    inspect. 50-10-7
  SYNCSHUTTLE—remove and install 50-10-4
Clutch disengage switch
  Replace, POWRREVERSER. 40-10-70
Clutch enable solenoid
  Replace, POWRREVERSER. 40-10-92
Clutch gear
  Without EH Hi/Lo—disassemble, inspect, and
    repair. 50-12-30
Clutch housing
  Install to engine, isolated open operator station
    and cab tractors 50-05-21
  Install to engine, straddle mount 50-05-7
  POWRREVERSER—separate from
    transmission 50-16-3
  Separate from engine, isolated open operator
    station and cab tractors 50-05-12
  Separate from engine, straddle mount 50-05-3
  SYNCSHUTTLE—install to transmission,
    isolated open operator station and cab
    tractors 50-15-16
  SYNCSHUTTLE—Install to transmission, straddle
    mount 50-15-9
  SYNCSHUTTLE—separate from transmision,
    isolated open operator station and cab
    tractors 50-15-14
  SYNCSHUTTLE—separate from transmision,
    straddle mount. 50-15-3
Clutch housing seal
  SYNCSHUTTLE—replace. 50-15-54

Page

Clutch hub, compressor
  Check clearance .90-20-20
Clutch pedal linkage, isolated open operator station and cab tractors (POWRREVERSER transmission)
  Inspect and repair 50-05-32
Clutch pedal linkage, isolated open operator station and cab tractors (SYNCSHUTTLE transmissions)
  Inspect and repair 50-05-35
Clutch pedal linkage, straddle mount (POWRREVERSER transmission)
  Inspect and repair 50-05-31
Clutch pedal linkage, straddle mount (SYNCSHUTTLE transmissions)
  Inspect and repair 50-05-33
Clutch pedal postition sensor
  Replace, POWRREVERSER. 40-10-68
Clutch pedal, isolated open operator station and cab tractors (POWRREVERSER transmission)
  Inspect and repair 50-05-32
Clutch pedal, isolated open operator station and cab tractors (SYNCSHUTTLE transmissions)
  Inspect and repair 50-05-35
Clutch pedal, straddle mount (POWRREVERSER transmission)
  Inspect and repair 50-05-31
Clutch pedal, straddle mount (SYNCSHUTTLE transmissions)
  Inspect and repair 50-05-33
Clutch release mechanism and shafts
  POWRREVERSER—install 50-11-12
  POWRREVERSER—remove and inspect. 50-11-9
  SYNCSHUTTLE—install 50-10-25
  SYNCSHUTTLE—remove and inspect . . .50-10-21
Clutch shaft
  With EH HI/LO—disassemble, inspect, and repair. 50-12-34
Clutch, compressor
  Disassemble and assemble 90-20-16
Cold start advance switch
  Replace 40-10-2
Compressor
  Air conditioning, remove, inspect and install. 90-20-11
  Clutch hub, check clearance 90-20-20
  Clutch, disassemble and assemble 90-20-16
  Manifold, inspect .90-20-21
  Oil charge check .90-20-31
  Relief valve, remove and install. 90-20-22
  Shaft seal, test leakage. 90-20-15
  Test volumetric effciency 90-20-13
Compresssor
  Disassemble, inspect and assemble 90-20-17

Page

Condenser
  Air conditioing, remove, inspect and install. 90-20-8
Connect shaft
  With EH Hi/Lo—disassemble, inspect, and repair. 50-12-31
Connector body blade terminals
  Replace 40-15-2
Control
  Load depth, replace—EH hitch 40-10-35
Control assembly
  Rockshaft, inspect and repair—IOOS and cab tractors 70-10-7
  Rockshaft, inspect and repair—straddle mount 70-10-3
Control cable
  Heater temperature, replace 90-25-1
Control console
  Left-side, remove and install—cab tractors 90-06-14
  Left-side, remove and install—IOOS tractors 90-06-7
  Left-side, remove and install—straddle mount 90-06-3
  Right-side, remove and install—cab tractors 90-06-8
  Right-side, remove and install—IOOS tractors 90-06-4
  Right-side, remove and install—straddle mount 90-06-1
Control levers and cables
  Rockshaft, inspect and repair—IOOS and cab tractors 70-10-11
Control linkage
  Rockshaft, inspect and repair 70-10-14
Control module
  Rockshaft, replace 40-10-30
Control valve
  Dual Mid Mount—disassemble, inspect and assemble. 70-20-13
  Heater, install 90-25-4
  Heater, leak test .90-25-3
  Heater, remove 90-25-3
  Rockshaft, replace—IOOS and cab tractors 70-10-21
  Rockshaft, replace—straddle mount 70-10-17
Controller
  Electro-hydraulic, replace—straddle mount 40-10-62
  Replace, 5225, 5325, 5425, 5525 and 5625 IOOS and cab tractors. 40-10-60
  Replace, 5603 tractors 40-10-61

Page

- Coolant
  - Additional information 10-20-11
  - Diesel engine 10-20-9
  - Testing 10-20-12
  - Warm temperature climates 10-20-10
- Coolant recovery tank
  - Remove and install 20-10-1
- Coolant temperature sender
  - Replace—5-cylinder tractors 40-10-3
- Coolant temperature sender, replace
  - 4-cylinder tractors 40-10-3
- Cooler, hydraulic oil
  - Remove, inspect and install 70-06-1
- Cooling system
  - Belt tensioner, inspect and replace—4-cylinder engine 20-10-13
  - Belt tensioner, inspect and replace—5-cylinder engine 20-10-15
  - Engine coolant pump repair 20-10-1
  - Radiator, install 20-10-7
  - Radiator, remove and inspect 20-10-4
  - Recovery tank, remove and install 20-10-1
  - Thermostat, replace—4-cylinder engine 20-10-10
  - Thermostat, replace—5-cylinder engine 20-10-12
- Countershaft speed sensor
  - Replace 40-10-65
- Cowl cover
  - Remove and install 90-06-15
- Creeper
  - Assembly—disassemble, inspect, and assemble 50-40-4
  - Assembly—remove and install 50-40-2
- Cutch housing
  - POWRREVERSER—install to transmission 50-16-3

D

- Dealer fabricated tools
  - Compressor holding fixture 99-05-2
  - DFRW83 nozzle assembly 99-05-3
  - Final drive turning tool. 99-05-1
  - Snap ring removal tool 99-05-4
- Diesel engine oil. 10-20-7
- Diesel fuel 10-20-1, 10-20-4
- Differential
  - Assembly—disassemble, inspect, and assemble 50-25-6
  - Assembly—remove and install 50-25-4
  - Backlash adjustment 50-25-15
  - Cone point adjustment 50-25-14
  - Dive shaft—install 50-25-9
  - Drive shaft—remove and inspect 50-25-7
  - Lock assembly—remove, inspect, and install. 50-25-12
- Differential assembly
  - Disassemble, inspect, and assemble 50-25-6
  - Remove and install 50-25-4
- Directional reverser
  - Electro-hydraulic, replace—POWRREVERSER 40-10-78
- Dome light
  - Replace 40-10-48
- Door switch
  - Replace 40-10-49
- Doors, cab
  - Remove and install 90-15-18
- Draft sensing support assembly
  - Rockshaft, inspect and repair 70-10-65
- Draw bar and support
  - Remove and install 80-15-7
- Drive assembly, final
  - Hi-Crop—remove, inspect, and install 50-31-6
  - Remove and install 50-30-3
- Drive assembly, planetary
  - Install 50-30-6
  - Remove and inspect 50-30-5
- Drive shaft
  - Differential—install 50-25-9
  - Differential—remove and inspect. 50-25-7
- Drive shaft assembly
  - PTO, rear standard and 540/540E—remove and install. 50-20-11
  - Rear 540/540E PTO—disassemble, inspect, and assemble. 50-20-16
  - Standard PTO, rear 540/1000—disassemble, inspect, and assemble. 50-20-18
  - Standard PTO, rear—disassemble, inspect, and assemble. 50-20-12
- Drive shaft, MFWD
  - Remove, inpect, and install. 50-35-16
  - Remove, inspect, and install 50-35-16
- Driven shaft
  - SYNCSHUTTLE—disassemble, inspect, and assemble. 50-15-49
  - With EH HI/LO—disassemble, inspect, and repair. 50-12-33
  - Without EH HI/LO—disassemble, inspect, and repair. 50-12-32
- Drop gearbox, MFWD
  - Assemble 50-35-11
  - Cross section 50-35-10

Page

Disassemble and inspect 50-35-4
Remove and install 50-35-3
Dual Mid Mount valve
Disassemble, inspect and assemble 70-20-13
Dual or triple selective control valve
Remove and install, IOOS and cab tractors 70-15-9
Dual selective control valve
Disassemble, inspect and assemble 70-15-12

E

EH Hi/Lo control valve
Disassemble, inspect, and repair 50-12-12
Remove and install 50-12-10
Electrical repair
Alternator/regulator, replace 4-cylinder engine 40-05-5
Alternator/regulator, replace 5-cylinder engine 40-05-6
Battery, remove and install 40-05-2
Starter, remove and install 4-cylinder engine 40-05-4
Starter, remove and install 5-cylinder engine 40-05-3
Starter, repair 40-05-1
Electro-hydraulic controller
Replace, straddle mount 40-10-62
Replace, 5225, 5325, 5425, 5525 and 5625 IOOS and cab tractors. 40-10-60
Replace, 5603 tractors 40-10-61
Electro-hydraulic directional reverser
Replace, POWRREVERSER. 40-10-78
Electro-hydraulic PTO
Assembly, rear 540/1000 output shaft—disassemble, inspect, and assemble . . .50-20-26
Assembly, rear 540/540E output shaft—disassemble, inspect, and assemble . . .50-20-24
Pinion shaft, rear 540/540E, 540/1000—disassemble, inspect, and assemble . . .50-20-22
Shaft assembly, rear 540/540E—remove and install. 50-20-20
Valve—remove, inspect, and install. 50-20-28
Elements, air cleaner
Remove and install 30-10-2
Engine
Coolant pump repair 20-10-1
Install 20-05-16
Install to clutch housing, isolated open operator station and cab tractors 50-05-21
Install to clutch housing, straddle mount . . .50-05-7

Page

Remove 20-05-3
Repair. 20-05-2
Separate from clutch housing, isolated open operator station and cab tractors 50-05-12
Separate from clutch housing, straddle mount 50-05-3
Engine oil
Break-In (5425, 5525, 5625 and 5603) 10-20-6
Diesel 10-20-7
Engine oil pressure switch
Replace 40-10-5
Engine speed sensor
Replace 40-10-4
Evacuate procedure, air conditioning system 90-20-39
Evaporator/heater core
Install 90-20-26
Leak test. 90-20-25
Remove 90-20-24
Expansion valve
Bench test. 90-20-28
Service 90-20-27
External raise/lower switch
Replace, IOOS and cab tractors 40-10-90

F

Fenders
Remove and install, cab tractors. 80-20-6
Remove and install, IOOS tractors 80-20-3
Remove and install, straddle mount 80-20-2
Final drive
Assembly, Hi-Crop—remove, inspect, and install. 50-31-6
Assembly—remove and install 50-30-3
Fixed draft links
Inspect and repair. 80-15-2
Flush procedure, air conditioning system . . .90-20-35
Front axle, MFWD
Remove, inspect, and Install. 50-35-17
Repair. 50-35-2
Front axle, 2WD
Pivot pin bushing, inspect and replace 80-05-4
Remove and install 80-05-2
Spindle assembly, remove and install 80-05-5
Spindle shaft bushing, inspect and replace 80-05-6
Wheel bearings, inspect and replace 80-10-2
Fuel
Diesel 10-20-1, 10-20-4
Handling and storing 10-20-2

Page

Lubricity 10-20-3
Fuel filter/primer pump assembly
Remove and install 30-05-14
Fuel filter/water separator
Replace—4-cylinder engines. 30-05-13
Replace—5-cylinder engines. 30-05-13
Fuel level sender
Replace, IOOS and cab tractors 40-10-39
Replace, straddle mount 40-10-38
Fuel system
Fuel filter/water separator, replace—4-cylinder engines 30-05-13
Fuel filter/water separator, replace—5-cylinder engines 30-05-13
Fuel tank, IOOS and cab tractors—remove, inspect, and install. 30-05-6
Fuel tank, stradle mount—Remove, inspect, and install. 30-05-2
Injection pump, nozzle, and governor repair. 30-05-1
Fuel tank
Filling 10-20-5
Remove, inspect, and install—IOOS and cab tractors 30-05-6
Remove, inspect, and install—straddle mount 30-05-2
Fuel transfer pump (5603 and 5625)
Replace 30-05-15

G

Gear
Clutch, without EH Hi/Lo—disassemble, inspect, and repair 50-12-30
MFWD and range, POWRREVERSER—remove, inspect, and install 50-16-39
MFWD and range, SYNCSHUTTLE—remove, inspect, and install. 50-15-51
Reverse idle without EH Hi/Lo—disassemble, inspect, and repair. 50-12-28
Reverse idle, with EH Hi/Lo—disassemble, inspect, and repair 50-12-29
Gear and range shift levers
Inspect and repair. 50-15-20
Gearbox, drop, MFWD
Assemble 50-35-11
Cross section 50-35-10
Disassemble and inspect 50-35-4
Remove and install 50-35-3

Page

Gearshift shaft
Assembly, POWRREVERSER transmission—disassemble, inspect, and assemble . . .50-16-30
Assembly, SYNCSHUTTLE transmission—disassemble, inspect, and assemble . . .50-15-43
Governor
Repair. 30-05-1
Grease
Extreme pressure and multipurpose 10-20-15
Specific application 10-20-15
Ground speed estimates
Correction factors for other tires 10-10-11
POWRREVERSER creeper transmissions. .10-10-10
POWRREVERSER transmission. 10-10-9
SYNCSHUTTLE creeper transmissions. . . .10-10-8
SYNCSHUTTLE transmission 10-10-7

H

Headliner
Remove and install 90-15-5
Heater
Control valve, install 90-25-4
Control valve, leak test 90-25-3
Control valve, remove 90-25-3
Temperature control cable, replace. 90-25-1
Hi-Crop axle
Assembly—remove and install 50-31-2
High solenoid
Replace, POWRREVERSER. 40-10-95
Hi/Lo shifter switch
Replace, POWRREVERSER. 40-10-84
Hitch
Electro-hydraulic
Rockshaft control valve
Compensator valve, remove and install 70-10-37
Load check valve, remove and install 70-10-41
Load sense bleed orifice, remove and install 70-10-44
Load sense relief valve, remove and install 70-10-42
Manual override valve, remove and install 70-10-38
Solenoid valve, remove and install. . .70-10-39
System relief valve, remove and install 70-10-40
Valve identificaton 70-10-36

Page

Work port relief valve, remove and install 70-10-43
Relief valve, replace 70-10-27
Hitch draft sensor
Replace, EH hitch 40-10-74
Hitch position sensor
Replace, EH hitch 40-10-75
Hitch solenoid
Replace, IOOS and cab tractors 40-10-64
Hood
Remove and install 80-25-1
HVAC
Housing cover remove and install 90-20-22
Housing cover, remove and install 90-20-22
Hydaulic repair
Hydraulic oil pick-up screen—remove, inspect, and install 70-05-3
Hydraulic pump, remove and install, 5-cylinder 70-05-4
Hydraulic lines
Brake, inspect and replace 60-10-18
Hydraulic lines, dual or triple Mid Mount
Inspect and replace. 70-20-27
Inspect and replace, with rear SCV. 70-20-29
Hydraulic lines—single, dual or triple SCV
Inspect and replace. 70-15-29
Inspect and replace, with Mid Mount. 70-15-31
Hydraulic oil cooler
Remove, inspect and install 70-06-1
Hydraulic oil filter/manifold
Remove and install 70-05-17
Hydraulic oil pick-up screen
Remove, inspect, and install 70-05-3
Hydraulic pump
Assemble, 4-cylinder. 70-05-15
Assemble, 5-cylinder. 70-05-8
Disassemble and inspect, 4-cylinder 70-05-13
Disassemble and inspect, 5-cylinder 70-05-6
Install external components, 4-cylinder . . .70-05-16
Install external components, 5-cylinder . . .70-05-10
Remove and install, 4-cylinder 70-05-11
Remove and install, 5-cylinder 70-05-4
Remove external components, 4-cylinder. 70-05-12
Remove external components, 5-cylinder. 70-05-5
Hydraulic repair
Hydraulic oil filter/manifold, remove and install. 70-05-17
Hydraulic pump, assemble, 4-cylinder. . . .70-05-15
Hydraulic pump, assemble, 5-cylinder. 70-05-8
Hydraulic pump, disassemble and inspect, 4-cylinder. 70-05-13

Page

Hydraulic pump, disassemble and inspect, 5-cylinder. 70-05-6
Hydraulic pump, install external components, 4-cylinder. 70-05-16
Hydraulic pump, install external components, 5-cylinder. 70-05-10
Hydraulic pump, remove and install, 4-cylinder. 70-05-11
Hydraulic pump, remove external components, 4-cylinder. 70-05-12
Hydraulic pump, remove external components, 5-cylinder. 70-05-5
Hydraulic supply/return lines
Inspect and replace, 4-cylinder tractors (with SCV) 70-05-18
Inspect and replace, 4-cylinder tractors (without SCV) 70-05-19
Inspect and replace, 5-cylinder tractors (with SCV) 70-05-20
Inspect and replace, 5-cylinder tractors (without SCV) 70-05-21

I

Injection nozzle
Repair. 30-05-1
Injection pump
Repair. 30-05-1
Install
Brakes 60-10-15
Instrument cluster
Program 40-10-22
Instrument panel
Replace (5603 Cab Tractor) 40-10-22
Replace, straddle mount 40-10-16
Replace, 5225, 5325, 5425, 5525 and 5625 IOOS and Cab tractors 40-10-18
Isolated open operator station
Install 90-16-10
Remove 90-16-1

J

Joystick and linkage
Inspect and repiar .70-20-3

K

Key switch
Replace, 5225, 5325, 5425, 5525 and 5625 tractors 40-10-5

Page

Replace, 5603 tractors 40-10-7
Kits and accessories 10-30-8

L

Lever and linkage, rear PTO
Inspect and repair, isolated open operator station and cab tractors 50-20-5
Inspect and repair, straddle mount 50-20-3
Levers, gear and range shift
Inspect and repair 50-15-20
Lift arms
Rockshaft—remove, inspect and install. . .70-10-62
Lift link
Adjustable, inspect and repair 80-15-5
Standard, inspect and repair 80-15-4
Light
Dome, replace 40-10-48
Light switch—5225, 5325, 5425, 5525 and 5625
Replace 40-10-8
Light switch—5603
Replace 40-10-9
Linkage and lever, rear PTO
Inspect and repair, isolated open operator station and cab tractors 50-20-5
Inspect and repair, straddle mount 50-20-3
Linkage, speed control
Inspect and repair—IOOS and cab tractors, 5-cylinder. 30-15-10
Inspect and repair—IOOS and cab tractors, 5425, 5525 and 5625 30-15-6
Inspect and repair—straddle mount, 4-cylinder. 30-15-2
Inspect and repair—straddle mount, 5-cylinder. 30-15-4
Inspect and repair—5603 cab tractors. 30-15-8
Inspect/repair, with 540/1000 PTO 30-15-12
Load depth control
Replace, EH hitch 40-10-35
Load sense relief valve
Replace, mechanical hitch 70-10-29
Lock assembly
Differential—remove, inspect, and install. 50-25-12
Lubricant
Mixing 10-20-15
Storage 10-20-16
Lubricity of diesel fuel. 10-20-3

M

Machine dimensions
Cab. 10-10-18

Page

Hi-Crop 5525 straddle mount 10-10-14
Isolated open operator station. 10-10-16
Straddle mount .10-10-12
Main relief valve
Rockshaft, replace 70-10-25
Manifold, compressor
Inspect 90-20-21
MFWD
Axle housing—remove and install 50-35-17
Axle housing—repair. 50-35-2
Drive shaft—remove, inspect, and install. 50-35-16
Drop gearbox—cross section 50-35-10
Drop gearbox—remove and install 50-35-3
Drop gearbx—assemble 50-35-11
Drop gearbx—disassemble and inspect . . .50-35-4
Gear, POWRREVERSER—remove, inspect, and install. 50-16-39
Gear, SYNCSHUTTLE—remove, inspect, and install. 50-15-51
MFWD axle
Repair. 60-05-26
MFWD solenoid
Replace 40-10-96
MFWD switch
Replace 40-10-97
Mid Mount control valve
Remove and install 70-20-9
Mid Mount controls
Joystick and linkage, inspect and repair . . .70-20-3
Mid Mount solenoid
Replace 40-10-91
Mid Mount solenoid switch
Replace 40-10-85
Mid Mount, dual or triple
Hydraulic lines, inspect and replace 70-20-27
Hydraulic lines, inspect and replace—with rear SCV. 70-20-29
Mixing lubricants. .10-20-15
Motor
Wiper, replace. .40-10-42

N

Neutral start switch
Replace, SYNCSHUTTLE IOOS and cab tractors 40-10-37
Replace, SYNCSHUTTLE straddle mount 40-10-37

Page

O

O-ring boss fittings .10-10-31
Oil
  MFWD axle housing and wheel hub 10-20-14
Oil filters. 10-20-8
Oil, refrigerant
  Addition of. 90-20-33
  Information 90-20-30
Operator station, isolated open
  Install 90-16-10
  Remove 90-16-1
Optional equipment
  Factory installed .10-30-7
  Field installed 10-30-8
Output shaft assembly
  Electro-hydraulic PTO, rear 540/1000—
    disassemble, inspect, and assemble . . .50-20-26
  Electro-hydraulic PTO, rear 540/540E—
    disassemble, inspect, and assemble . . .50-20-24

P

Panel, instrument
  Replace, straddle mount 40-10-16
  Replace, 5225, 5325, 5425, 5525 and 5625
    IOOS and Cab tractors 40-10-18
Park switch
  Replace, POWRREVERSER. 40-10-83
Pinion shaft
  Electro-hydraulic PTO, rear 540/540E,
    540/5401000—disassemble, inspect, and
    assemble. 50-20-22
Piston and cylinder
  Rockshaft—remove, inspect and install. . .70-10-63
Pivot pin and bushing
  2WD axle, inspect and replace 80-05-4
Planetary drive
  Assembly—install .50-30-6
  Assembly—remove and inspect 50-30-5
POWRREVERSER
  With EH Hi/Lo—disassemble, inspect, and
    repair. 50-12-44
  With EH Hi/LO—remove and install 50-12-20
  Without EH Hi/Lo—disassemble, inspect, and
    repair. 50-12-39
  Without EH Hi/Lo—remove and install . . .50-12-14
POWRREVERSER control valve
  Disassemble, inspect, and repair 50-12-8
  Remove and install 50-12-5

Page

POWRREVERSER enable pressure sensor
  Replace 40-10-67
Primer pump assembly
  Remove and install 30-05-14
Program
  Instrument Cluster. 40-10-22
PTO
  Drive shaft assembly, rear standard and
    540/540E—remove and install 50-20-11
PTO clutch finger
  POWRREVERSER—adjustment. 50-11-8
  SYNCSHUTTLE—adjustment 50-10-20
PTO lever and linkage, rear
  Inspect and repair, isolated open operator
    station and cab tractors 50-20-5
  Inspect and repair, straddle mount 50-20-3
PTO 540/1000 shift lever and linkage
  Inspect and repair, isolated open operator
    station and cab tractors 50-20-9
  Inspect and repair, straddle mount 50-20-7
PTO 540/540E shift lever and linkage
  Inspect and repair, isolated open operator
    station and cab tractors 50-20-9
  Inspect and repair, straddle mount 50-20-7
Pump
  Transmission—remove, inspect, and
    repair. 50-11-15

R

Radiator
  Install 20-10-7
  Remove and inspect 20-10-4
Range
  Gear, POWRREVERSER—remove, inspect, and
    install. 50-16-39
  Gear, SYNCSHUTTLE—remove, inspect, and
    install. 50-15-51
Range reduction shaft
  POWRREVERSER transmission—disassemble,
    inspect, and assemble 50-16-36
  SYNCSHUTTLE—disassemble, inspect, and
    assemble. 50-15-48
Rate-of-drop valve
  Rockshaft, remove, inspect and install—straddle
    mount 70-10-31
Rear PTO lever and linkage
  Inspect and repair, isolated open operator
    station and cab tractors 50-20-5
  Inspect and repair, straddle mount 50-20-3

Page

Rear PTO sensor
  Replace, POWRREVERSER. 40-10-73
Rear PTO solenoid
  Replace, EH PTO 40-10-95
Rear PTO switch
  Replace, EH PTO 40-10-29
  Replace, IOOS and cab tractor 40-10-28
  Replace, straddle mount 40-10-28
Receiver/dryer
  Air conditioning, replace 90-20-7
Refrigerant
  Air conditioning, recover and recycle. 90-20-6
Refrigerant oil
  Addition of. 90-20-33
  Charge determination 90-20-32
  Information 90-20-30
Relay
  Start, replace 40-10-63
Relief valve
  Hitch, replace 70-10-27
Relief valve, compressor
  Remove and install 90-20-22
Remove and inspect
  Brakes 60-10-12
Repair specifications
  5225, 5325, 5425, and 5525 machines . . .10-10-20
Resistor
  Blower motor, replace. 40-10-46
Reverse idle gear
  With EH Hi/Lo—disassemble, inspect, and
    repair. 50-12-29
  Without EH Hi/Lo—disassemble, inspect, and
    repair. 50-12-28
Reverse idler shaft
  SYNCSHUTTLE—remove, inspect, and
    install, ...50-15-52
Rockshaft
  Case, remove and install—EH hitch 70-10-58
  Case, remove and install—mechanical hitch,
    IOOS and cab tractors. 70-10-55
  Case, remove and install—straddle
    mount 70-10-48
  Control assembly, inpect and repair—IOOS and
    cab tractors 70-10-7
  Control levers and cables, inspect and repair—
    IOOS and cab tractors. 70-10-11
  Control linkage, inspect and repair 70-10-14
  Control valve
    Component ID .70-10-36
  Control valve, remove and install—EH
    hitch 70-10-33
  Control valve, replace—IOOS and cab
    tractors 70-10-21
  Control valve, replace—straddle mount. . .70-10-17
  Draft sensing support assembly, inspect and
    repair. 70-10-65
  Electro-hydraulic control valve, repair 70-10-35
  Lift arms—remove, inspect and install. . . .70-10-62
  Load sense relief valve, replace—mechanical
    hitch 70-10-29
  Main relief valve, replace 70-10-25
  Piston and cylinder—remove, inspect and
    install. 70-10-63
  Rate-of-drop valve, remove, inspect and install—
    straddle mount. 70-10-31
Rockshaft control module
  Replace 40-10-30
Rockshaft control valve
  Electro-hydraulic, exploded view 70-10-46
Rockshaft,
  Control assembly, inspect and repair—straddle
    mount 70-10-3
ROLL-GARD
  Remove and install, IOOS. 90-10-3
  Remove and install, straddle mount 90-10-1
Roof
  A/C housing inner, remove and install. . . .90-15-22
  Cab, outer, remove and install 90-15-21

S

SCV levers and linkage
  Inspect and repair, IOOS and cab
    tractors 70-15-6
  Inspect and repair, straddle mount 70-15-4
SCV, dual
  Disassemble, inspect and assemble 70-15-12
SCV, dual or triple
  Remove and install, IOOS and cab
    tractors 70-15-9
SCV, single, dual or triple
  Hydraulic lines, inspect and replace 70-15-29
  Hydraulic lines, inspect and replace—with Mid
    Mount 70-15-31
SCV, triple
  Disassemble, inspect and assemble 70-15-19
Seal, clutch housing
  SYNCSHUTTLE—replace. 50-15-54
Seal, compressor shaft
  Leakage test 90-20-15
Seat and support
  Remove and install, cab tractors. 90-05-3
  Remove and install, IOOS and cab
    tractors 90-05-2

Page

  Remove and install, straddle mount . . . 90-05-1
Seat height control switch
  Replace . . . 40-10-98
Seat switch
  Replace, IOOS and cab tractors . . . 40-10-50
  Replace, straddle mount . . . 40-10-51
Sender
  Coolant temperature, replace—4-cylinder tractors . . . 40-10-3
  Coolant temperature, replace—5-cylinder tractors . . . 40-10-3
  Fuel level, replace—IOOS and cab tractors . . . 40-10-39
  Fuel level, replace—straddle mount . . . 40-10-38
Sensor
  Clutch pedal position, replace—POWRREVERSER . . . 40-10-68
  Countershaft speed, replace . . . 40-10-65
  Engine speed, replace . . . 40-10-4
  Hitch draft, replace—EH hitch . . . 40-10-74
  Hitch position, replace—EH hitch . . . 40-10-75
  POWRREVERSER enable pressure, replace . . . 40-10-67
  Rear PTO, replace—POWRREVERSER . . . 40-10-73
  Wheel speed, replace . . . 40-10-66
Serial number location
  Cab . . . 10-25-7
Serial number locations
  Air conditioning compressor . . . 10-25-6
  Alternator . . . 10-25-3
  Engine, 4-cylinder . . . 10-25-1
  Engine, 5-cylinder . . . 10-25-2
  Fuel injection pump . . . 10-25-2
  MFWD . . . 10-25-6
  Power steering valve . . . 10-25-3
  Product . . . 10-25-1
  Starter, 4-cylinder engine . . . 10-25-4
  Starter, 5-cylinder engine . . . 10-25-4
  Transmission . . . 10-25-5
  2WD axle . . . 10-25-5
Service parts
  Kits . . . 50-11-2
Shaft
  Bottom, POWRREVERSER transmission—disassemble, inspect, and assemble . . . 50-16-32
  Clutch release mechanism, POWRREVERSER—install . . . 50-11-12
  Clutch release mechanism, POWRREVERSER—remove and inspect . . . 50-11-9
  Clutch release mechanism, SYNCSHUTTLE—install . . . 50-10-25

Page

  Clutch release mechanism, SYNCSHUTTLE—remove and inspect . . . 50-10-21
  Connect, with EH Hi/LO—disassemble, inspect, and repair . . . 50-12-31
  Driven, SYNCSHUTTLE—disassemble, inspect, and assemble . . . 50-15-49
  Driven, with EH Hi/LO—disassemble, inspect, and repair . . . 50-12-33
  Driven, without EH Hi/LO—disassemble, inspect, and repair . . . 50-12-32
  EH Hi/LO clutch—disassemble, inspect, and repair . . . 50-12-34
  Gearshift assembly, POWRREVERSER transmission—disassemble, inspect, and assemble . . . 50-16-30
  Gearshift assembly, SYNCSHUTTLE transmission—disassemble, inspect, and assemble . . . 50-15-43
  Range reduction, POWRREVERSER transmission—disassemble, inspect, and assemble . . . 50-16-36
  Range reduction, SYNCSHUTTLE—disassemble, inspect, and assemble . . . 50-15-48
  Reverse idle, SYNCSHUTTLE—remove, inspect, and install, SYNCSHUTTLE . . . 50-15-52
  Top, POWRREVERSER transmission—disassemble, inspect, and assemble . . . 50-16-37
  Top, SYNCSHUTTLE—disassemble, inspect, and assemble . . . 50-15-45
Shaft , axle
  Assembly—remove, inspect, and install . . . 50-30-9
Shaft assembly
  Electro-hydraulic PTO, rear 540/540E—remove and install . . . 50-20-20
Shift lever and linkage, PTO 540/1000
  Inspect and repair, isolated open operator station and cab tractors . . . 50-20-9
  Inspect and repair, straddle mount . . . 50-20-7
Shift lever and linkage, PTO 540/540E
  Inspect and repair, isolated open operator station and cab tractors . . . 50-20-9
  Inspect and repair, straddle mount . . . 50-20-7
Solenoid
  Clutch enable, replace—POWRREVERSER . . . 40-10-92
  Hitch, replace—IOOS and cab tractors . . . 40-10-64
  MFWD, replace . . . 40-10-96
  Mid Mount, replace . . . 40-10-91
  Rear PTO, replace—EH PTO . . . 40-10-95
  Trans forward, replace—POWRREVERSER . . . 40-10-93
  Trans reverse, replace—POWRREVERSER . . . 40-10-94

Page

Solenoid,
  High, replace—POWRREVERSER 40-10-95
Speakers
  Replace 40-10-9
Specifications
  5225 and 5325 machines 10-10-1
  5425 and 5525 machines 10-10-4
Speed control linkage
  Inspect/repair, with 540/1000 PTO 30-15-12
Speed control linkage,
  Inspect and repair—IOOS and cab tractors,
    5-cylinder. 30-15-10
  Inspect and repair—IOOS and cab tractors,
    5425, 5525 and 5625 30-15-6
  Inspect and repair—straddle mount,
    4-cylinder. 30-15-2
  Inspect and repair—straddle mount,
    5-cylinder. 30-15-4
  Inspect and repair—5603 cab tractors. 30-15-8
Spindle assembly
  2WD axle, remove and install 80-05-5
Spindle shaft bushing
  2WD axle, inspect and replace bushing . . .80-05-6
Standard features
  Straddle mount and IOOS. 10-30-2
  Straddle mount Hi-Crop 10-30-6
Standard features, cab tractors. 10-30-4
Standard PTO
  Assembly, rear drive shaft—disassemble, inspect,
    and assemble .50-20-12
  Drive shaft assembly, rear 540/1000—
    disassemble, inspect, and assemble . . .50-20-18
Start relay
  Replace 40-10-63
Starter
  Remove and install, 4-cylinder engine. 40-05-4
  Remove and install, 5-cylinder engine. 40-05-3
  Repair. 40-05-1
Steering column
  Cowl cover, remove and install 90-06-15
Steering cylinder
  MFWD, remove and install 60-05-23
  2WD axle, disassemble, inspect, and
    assemble. 60-05-22
  2WD axle, remove and install 60-05-20
Steering hydraulic lines-
  With cooler, inspect and replace—IOOS and cab
    tractors 60-05-34
  With cooler, inspect and replace—straddle
    mount 60-05-30
  Without cooler, inspect and replace—IOOS and
    cab tractors 60-05-32
  Without cooler, inspect and replace—straddle
    mount 60-05-28
Steering system repair
  Steering cylinder—MFWD axle, remove and
    install. 60-05-23
  Steering cylinder—2WD axle, disassemble,
    inspect, and assemble. 60-05-22
  Steering cylinder—2WD axle, remove and
    install. 60-05-20
  Steering hydraulic lines—cab and isolated open
    operators station with oil cooler, inspect and
    replace 60-05-34
  Steering hydraulic lines—cab and isolated open
    operators station without oil cooler, inspect and
    replace 60-05-32
  Steering hydraulic lines—straddle mount
    tractors with oil cooler, inspect and
    replace 60-05-30
  Steering hydraulic lines—straddle mount
    tractors without oil cooler, inspect and
    replace 60-05-28
  Steering valve, assemble 60-05-15
  Steering valve, disassemble and inspect. . .60-05-9
  Steering valve—telescoping steering column,
    remove and install 60-05-8
  Straight steering column and valve, remove and
    install. 60-05-4
  Tie rod assembly—MFWD axle, remove, inspect
    and install 60-05-27
  Tie rod assembly—2WD axle, remove, inspect and
    install. 60-05-25
  Tilt/telescoping steering column, remove and
    install. 60-05-6
Steering valve
  Assemble 60-05-15
  Disassemble and inspect 60-05-9
  Tilt/telescoping steering column, remove and
    install. 60-05-8
Storing fuel. 10-20-2
Storing lubricants .10-20-16
Straight steering column and valve
  Remove and install 60-05-4
Switch
  A/C on/off, replace 40-10-44
  A/C temperature control, replace. 40-10-45
  Air filter restriction, replace 40-10-2
  Blower control, replace 40-10-44
  Clutch disengage, replace—
    POWRREVERSER 40-10-70
  Cold start advance, replace 40-10-2
  Engine oil pressure, replace 40-10-5
  External raise/lower, replace—IOOS and cab
    tractors 40-10-90

Page

Hi/Lo shifter, replace—
POWRREVERSER 40-10-84
Key, replace— 5603 tractors. 40-10-7
Key, replace—5225, 5325, 5425, 5525 and 5625
tractors 40-10-5
Light, replace—5225, 5325, 5425, 5525 and
5625 40-10-8
Light, replace—5603 40-10-9
MFWD, replace .40-10-97
Mid Mount solenoid, replace 40-10-85
Neutral start, replace—SYNCSHUTTLE IOOS and
cab tractors 40-10-37
Neutral start, replace—SYNCSHUTTLE straddle
mount 40-10-37
Park, replace—POWRREVERSER 40-10-83
Seat height control, replace 40-10-98
Seat, replace—IOOS and cab tractors . . .40-10-50
Seat, replace—straddle mount 40-10-51
Turn signal, replace—5225, 5325, 5425, 5525 and
5625 40-10-14
Turn signal, replace—5603 40-10-15
Wiper control, replace—5225, 5325, 5425, 5525
and 5625 40-10-40
Wiper control, replace—5603 40-10-41
Switch,
Brake pedal, replace—electro-hydraulic
tractors 40-10-83
PTO, replace—EH PTO 40-10-29
PTO, replace—IOOS and cab tractors . . .40-10-28
PTO, replace—straddle mount 40-10-28
Switch, air conditioning high/low pressure
Replace 40-10-47
Switch, door
Replace 40-10-49

T

Telescoping draft links
Inspect and repair .80-15-3
Thermostat
Replace—4-cylinder engine 20-10-10
Replace—5-cylinder engine 20-10-12
Three-point hitch
Adjustable lift link, inspect and repair 80-15-5
Center link, inspect and repair 80-15-6
Fixed draft links, inspect and repair. 80-15-2
Standard lift link, inspect and repair 80-15-4
Telescoping draft links, inspect and
repair. 80-15-3
Tie rod assembly
MFWD, remove, inspect and install. 60-05-27

Page

2WD axle, remove, inspect and install . . .60-05-25
Tilt/telescoping steering column
Remove and install 60-05-6
Top shaft
POWRREVERSER transmission—disassemble,
inspect, and assemble. 50-16-37
SYNCSHUTTLE—disassemble, inspect, and
assemble. 50-15-45
Torque value
Flat face O-ring seal fitting 10-10-33
Metric 10-10-34
O-Ring boss fitting 10-10-31
Traction clutch finger
SYNCSHUTTLE—adjustment 50-10-19
Trans forward solenoid
Replace, POWRREVERSER. 40-10-93
Trans reverse solenoid
Replace, POWRREVERSER. 40-10-94
Transmission
POWRREVERSER—assemble 50-16-15
POWRREVERSER—
disassemble/inspect. 50-16-10
POWRREVERSER—install 50-16-22
POWRREVERSER—install clutch
housing 50-16-3
POWRREVERSER—remove 50-16-4
POWRREVERSER—separate clutch
housing 50-16-3
SYNCSHUTTLE—assemble 50-15-31
SYNCSHUTTLE—disassemble and
inspect. 50-15-26
SYNCSHUTTLE—install 50-15-35
SYNCSHUTTLE—install clutch housing,
isolated open operator station and cab
tractors 50-15-16
SYNCSHUTTLE—install clutch housing, straddle
mount 50-15-9
SYNCSHUTTLE—remove. 50-15-22
SYNCSHUTTLE—separate clutch housing,
isolated open operator station and cab
tractors 50-15-14
SYNCSHUTTLE—Separate clutch housing,
straddle mount. 50-15-3
Transmission pump
Remove, inspect, and repair 50-11-15
Transmission/hydraulic filter element 10-20-13
Triple Mid Mount control valve
Disassemble, inspect and assemble 70-20-17
Triple selective control valve
Cross-sectional view 70-15-18
Disassemble, inspect and assemble 70-15-19
Turbocharger
Break-in 30-10-8

Page

Install—4-cylinder .30-10-5
Install—5-cylinder .30-10-7
Remove—4-cylinder 30-10-4
Remove—5-cylinder 30-10-6
Repair 30-10-1
Turn signal switch—5225, 5325, 5425, 5525 and 5625
Replace 40-10-14
Turn signal switch—5603
Replace 40-10-15

U

Upholstery
Left side, remove and install 90-15-7
Right side, remove and install 90-15-8

V

Valve
Brake , assemble .60-10-9
Brake and pedals, cross section 60-10-8
Brake and pedals, disassemble and inspect 60-10-5
Brake and pedals, remove and install 60-10-3
Control, EH Hi/Lo—disassemble, inspect, and repair 50-12-12
Control, EH Hi/Lo—remove and install . . .50-12-10
Electro-hydraulic PTO—remove, inspect, and install 50-20-28
POWRREVERSER control—disassemble, inspect, and repair 50-12-8
POWRREVERSER control—remove and install 50-12-5
Rockshaft control, repair 70-10-35
Valve, expansion
Bench test 90-20-28
VEC load center
Replace, cab tractors 40-10-58
Replace, IOOS tractors 40-10-55
Replace, straddle mount 40-10-59
Volumetric efficiency
Compressor, test .90-20-13

W

WEATHER PACK connector
Replace 40-15-3

Page

WEATHER PACK contact
Install 40-15-4
Wheel bearings
2WD axle, inspect and replace 80-10-2
Wheel speed sensor
Replace 40-10-66
Window
Front lower, remove and install 90-15-15
Rear lower, remove and install 90-15-15
Rear upper, remove and install 90-15-16
Side, remove and install 90-15-17
Windshield
Remove and install 90-15-13
Wiper control switch—5225, 5325, 5425, 5525 and 5625
Replace 40-10-40
Wiper control switch—5603
Replace 40-10-41
Wiper motor
Replace 40-10-42
Wiring harness, console (isolated open operator station)
Replace 40-15-18
Wiring harness, console, cab tractors (POWRREVERSER transmission)
Replace 40-15-24
Wiring harness, console, cab tractors (SYNCSHUTTLE transmission)
Replace 40-15-22
Wiring harness, console, isolated open operator station (POWRREVERSER transmission)
Replace 40-15-20
Wiring harness, engine, 4-cylinder
Replace 40-15-16
Wiring harness, engine, 5-cylinder
Replace 40-15-14
Wiring harness, fused power
Replace 40-15-12
Wiring harness, headlight
Replace 40-15-10
Wiring harness, rear
Replace (isolated open operator station, POWRREVERSER transmission, hydraulic hitch) 40-15-34
Wiring harness, rear, cab tractors (POWRREVERSER transmission)
Replace 40-15-38
Wiring harness, rear, cab tractors (SYNCSHUTTLE transmission)
Replace 40-15-36
Wiring harness, rear, isolated open operator station (POWRREVERSER transmission)
Replace 40-15-32

Page

Wiring harness, rear, isolated open operator station
(SYNCSHUTTLE transmission)
Replace 40-15-30
Wiring harness, rear, straddle mount
(POWRREVERSER transmission)
Replace 40-15-28
Wiring harness, rear, straddle mount
(SYNCSHUTTLE transmission)
Replace 40-15-26
Wirng harness, rear, cab tractors with EH hitch
(POWRREVERSER transmission)
Replace 40-15-40